# AMERICAN FORESTS

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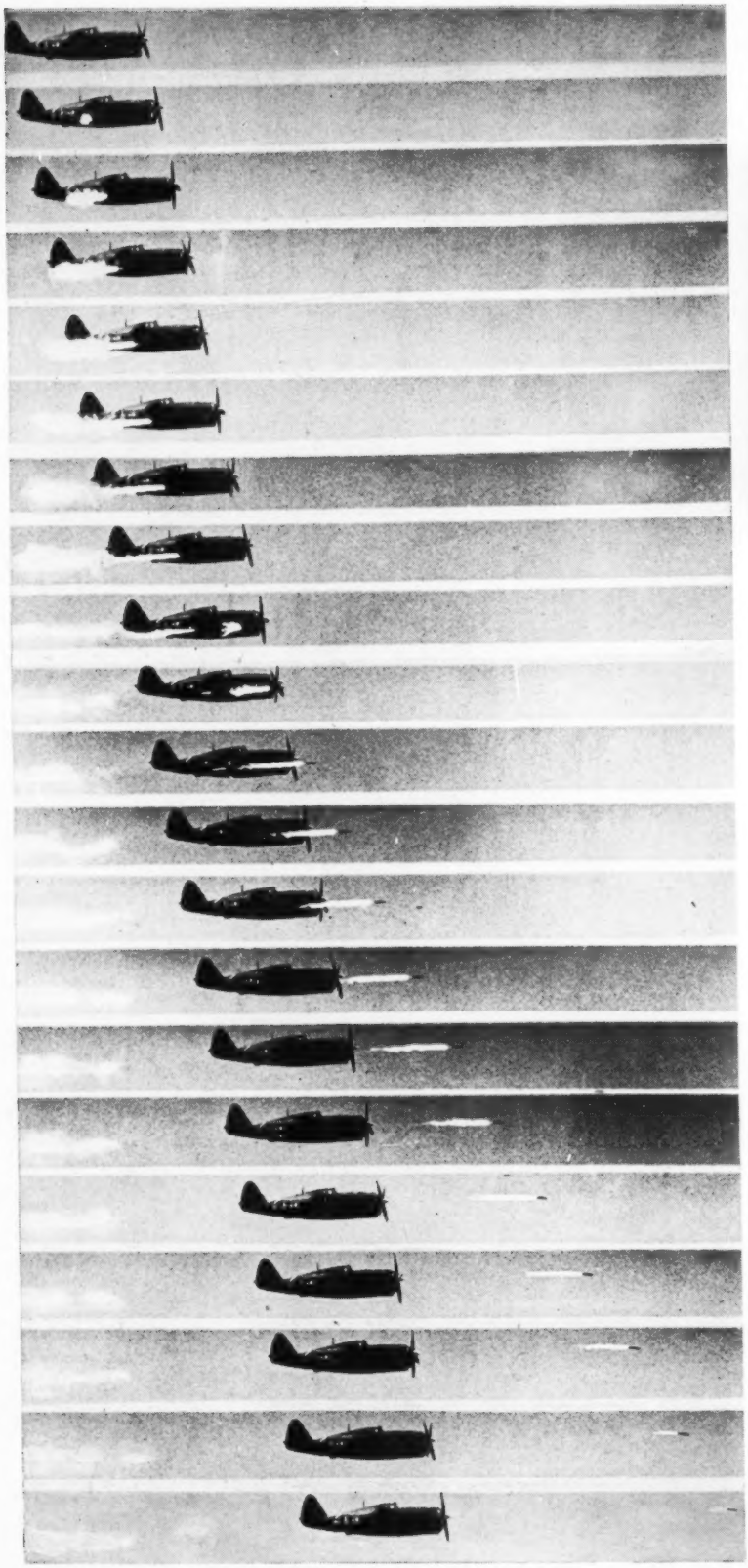

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# AMERICAN FORESTS

VOLUME 51 MAY, 1945 NUMBER 5

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THE COVER

PTs—Fighting Boats of Wood—"They Strike At Night"
Official U. S. Navy Photograph

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## American Forests

Published monthly by

THE
AMERICAN FORESTRY
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919 Seventeenth Street
Washington 6, D. C.

The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

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# My Favorite Tree

**BASIL O'CONNOR**
Chairman, The American Red Cross

BASIL O'CONNOR, chairman of the American Red Cross, has always loved trees. Trees are his hobby, his relaxation. Although he plants a great many different kinds on his farm in Westhampton, Long Island, his favorite is the Norway maple.

This beautiful shade tree with its abundant foliage grows well in New York and especially well, according to Chairman O'Connor, in Westhampton. One reason why it ranks as his favorite above all others is that its leaves are a vivid Dartmouth green, a pleasant reminder of his college days.

Another reason for his preference dates back to the famous Long Island hurricane of a few years ago. Mr. O'Connor's trees suffered from this disaster along with most in that part of Long Island. But his Norway maples were reinstated without too much difficulty.

"The Norway maple's roots are near the surface," says Mr. O'Connor happily, "and when they're torn out of the ground, they're easy to put back!"

There are a great many beautiful trees on Mr. O'Connor's Long Island farm. He has planted them himself and watched them grow with great satisfaction. He cares for his trees with his own hands, spending his few free week-end hours pruning and tending them.

A man working an eighteen-hour day, as Mr. O'Connor does, must have some relaxation. Taking care of his trees is his favorite diversion and exercise when he can get away from his arduous duties as chairman of the American Red Cross and president of the National Foundation for Infantile Paralysis.

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# THE FOREST EXCHANGE . . .

### The NPA on Three Forks

SIR: A lack of usable trails through the 18,000 primeval wilderness acres of the Three Forks research area of the Great Smoky Mountains National Park has apparently precipitated a controversy of no small proportions.

It might be assumed that on the scientific and esthetic "side of the fence," as opposed to the commercial, we would find complete agreement on the exclusion of horse trails from the entire research area. That is not so, however, for at least two scientists have expressed a need for horse trails there (see Forest Exchange, March issue).

It would seem to me that the Cain article (More About Three Forks, January issue) supports the policy of the National Park Service with regard to its management of research areas throughout the park system. The article is basically sound and has, no doubt, been heartily approved by scientists and those who value undisturbed nature for esthetic reasons. But, since there is not full agreement among scientists as to the question of trails in this area, there appears to be good reason for a thorough study being given the matter by officials of the Park Service and by interested private groups. On the one hand, it is argued that horse trails would do the area no injury, while on the other it is contended that they would bring about an alteration of natural conditions. It would appear, however, that a foot trail completely traversing the width of the area would be appropriate and necessary. Perhaps a loop trail would serve most satisfactorily. The area would then be accessible to scientists, and the trail would provide a hike extension to horse-pack trippers into a true wilderness.

The Cains say in their article, "It is a first principle that the entire body of a national park should be considered for all time a protective primitive area. The parks are also for the people to enjoy, insofar as the directions of their enjoyment are not inimical to the protection of the land. Yet so driven are men by the mechanizations by which they live that by increasing pressure for more roads, more gas stations, more camp grounds, more trails, and more camp sites they are sometimes in danger of destroying the very thing they seek. The comparatively small research areas in the national park system are designed to prevent such development."

In this statement the National Parks Association concurs, as it does also in the following by Dr. Cain: "The zealous protection of the existing ones (research areas), is so important that any en-

(*Turn to page* 247)


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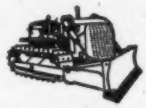

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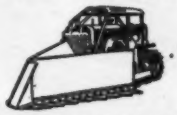

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# EDITORIALS

## "A GREAT TREE HAS FALLEN"

"A GREAT tree has fallen and left a vacant spot against the sky."

In these words the Reverend Harry Emerson Fosdick of New York, spoke of the death, on April 12, of President Franklin Delano Roosevelt. Whether or not they will live as an epitaph on Time's ageless scroll is for historians to decide. But to those who knew of his closeness to trees, no words have been penned or spoken that so appropriately characterize his passing.

For perhaps not since George Washington has a Chief Executive possessed such positive tree-loving qualities. Indeed, there is a close parallel between Mount Vernon of Washington's time and Hyde Park of the last two decades in that the historic grounds of each were transformed by their tree-loving owners into virtual arboretums. Just as Washington found sanctuary among his trees from the arduous task of gaining freedom for a people, so did Franklin Delano Roosevelt turn to his trees as an antidote for the grave responsibilities of preserving this freedom. But where Washington was essentially a "tree planter," F. D. R., in his own words, was a "tree grower." The design of one was to establish along the Potomac arboreal beauty through individual tree plantings, while the other visioned a productive Hudson River woodland operated under the principles of present-day forestry.

The President first began growing trees at Hyde Park as early as 1912 and his planting record up to the time of his death approached a half million young trees, one of the finest records among private landowners in the country. Especially did he prize his flourishing Christmas tree plantations, and one of his greatest joys was to show his young forests as well as his well managed natural woodland to his official and personal friends.

His deep understanding of trees and the many ways they serve humankind were expressed in one of his first acts as President of the United States—the establishment of the Civilian Conservation Corps. His leadership in this and other forestry movements gained for him the award, in 1935, of the Sir William Schlich Forestry Medal for distinguished service to American forestry. And he shared with only one other president — Theodore Roosevelt — the distinction of being accepted as an honorary member of the Society of American Foresters.

His reverence for trees—for all growing things—is eloquently recorded by Mrs. Eleanor Roosevelt in her newspaper feature "My Day" of April 20. Recalling their first visit to the Grand Canyon: "I thought it the most beautiful and majestic sight I had ever seen," she wrote, "but my husband said: 'No, it looks dead. I like my green trees at Hyde Park better. They are alive and growing.'"

And they shall continue growing—to memorialize with living green the vacant spot against the sky where "a great tree has fallen."

## THE PEACE CONFERENCE AND THE REDWOODS

WHEN, in 1942, Dr. John C. Merriam, one of the three founders of the Save-the-Redwoods League, suggested that the statesmen who eventually would settle the problems of world peace sojourn "at least a few hours in a redwood temple," it is doubtful that he ever dreamed that the peacemakers of the world would, in less than three years, be gathered almost within the shadows of these great trees. Yet such has come to pass, and the San Francisco Conference now in full swing gives immediate significance to his suggestion.

For those who may question just how a redwood forest can contribute to world peace, we restate Dr. Merriam's words: "Perhaps nowhere in the world do we sense more definitely and more deeply the feeling and the meaning of time than in a great redwood forest, where one stands among living individuals still growing and building up these stems reaching back without interruption of record to periods approaching the beginnings of the Christian Era. To one having this perspective there is possible an orderliness in study of the meaning of present world problems otherwise difficult to obtain. It may be that for the statesmen who settle those great questions in which time is a critical element we should recommend a sojourn of at least a few hours in a redwood temple, where time must be faced and in some measure appreciated."

The feeling and meaning of time measured in tens of centuries may help restore a perspective lost in five short years of conflict and destruction—time and the courage to look past the scars of battle and the clashing of ideologies to the fundamental meaning of life and growth. And where outside of a redwood temple where living individuals have been growing and building "without interruption of record to periods approaching the beginnings of the Christian Era" can war-shocked man seek such a perspective? Where can he find such an outstanding illustration, to use Dr. Merriam's words, "of a community in which the relations among individuals and groups have maintained themselves" for so long a period?

To an extent greater than ever before in history this is a war of ruthless destruction. By virtue of man's expanding ingenuity, future wars if not now forestalled will be more destructive, more ruthless. If we recognize the full significance of this accepted outlook the writers of a human constitution of world peace would do well to look down the long road of time to the as yet undefined art of living things living together amicably on this earth. In this, the place to start is the good earth itself where to the best of mortal understanding the elements and processes that combine to form what we too often are content to call the mysteries of nature may be evaluated. And where inspiration and guidance may perhaps be gained for charting the course of peace among the peoples of the world.

The outstanding example on this earth of living things living together peacefully for the longest period of time is the redwood forest. As a help to solving the problems of the peace, the San Francisco Conference we think, might well take time out for a session in this cathedral, where time and creation have lived and worked together in peaceful growth for upwards of thirty centuries.

# WOODEN BOATS AND IRON MEN

By LIEUTENANT (j.g.) CARL F. IMHOF, USNR

## Saga of the *Carole Baby*, One of the All-Wood PT Boats Which Helped Smash the Japanese Fleet in the Surigao Strait of the Philippines

LIEUTENANT R. W. BROWN of Brooklyn, skipper of the *Carole Baby*, was just donning his foul weather gear when a radio message reported eight Japanese naval craft, probably battleships, cruisers and destroyers, steaming toward him at a speed of twenty-five knots. The *Carole Baby* was one of many motor torpedo boats—the famous all-wood PT's (patrol torpedo)—delegated on the night of October 24 to report the presence of the Jap fleet in the Surigao Strait of the Philippines—and then attack it independently. The nerve-tingling radio message had been flashed from another PT stationed at the southwestern entrance of the strait.

Until the moon set in the early morning hours of October 25, the night had been quiet and beautiful. Then, in inky blackness, a tropical squall blew up, further restricting visi-

bility. This was the situation when the enemy was reported and Lieutenant J. M. McElfresh of Elmira, New York, officer in tactical command of the three-boat division which included the *Carole Baby*, ordered the boats to take an intercepting position three abreast on the western edge of the strait. This formation placed the *Carole Baby* on McElfresh's port side and a PT skippered by Lieutenant J. A. Thronson of Chippewa Falls, Wisconsin, on his starboard.

This disposition was no sooner executed than Lieutenant Brown sighted the approaching Jap battle force visually at three miles and began maneuvering into position to attack. It seemed only seconds later when McElfresh reported he had fired four torpedoes. Thronson followed with "Two torpedoes away." Then the night was transformed into a nightmare of gunfire, eerie green star shells, and powerful searchlights which pinpointed the attacking PT's. Since the two boats were spotted, they cut loose with their own small caliber guns and knocked out two enemy searchlights.

Feeling certain that McElfresh's and Thronson's boats had succumbed to the murderous barrage of gunfire and that his own craft was still undetected, Brown ordered his executive officer, Lieutenant R. E. Carter of New Jersey, at the helm, to close the enemy for a torpedo attack.

The *Carole Baby* moved in to 500 yards when Brown passed the word to fire two of the four "fish." The order was barely executed before the boat was the target of gunfire, star shells and searchlights.

"It was like a Fourth of July celebration exploding in our faces," said Lieutenant R. A. Hamilton of North Dakota, the *Carole Baby's* fire control officer. "The concussion of exploding shells nearly knocked us off the boat."

As the pattern of fire edged closer, Skipper Brown ordered Carter to come hard left, open the throttles, and GET OUT! He personally attended to releasing smoke. This, he hoped, would provide a screen to protect his boat, as well as the other PT's in the division if they were still afloat, and enable him to return and fire the two remaining "fish."

But the smoke screen did not appreciably slow the tempo of the attack, and Motor Machinist Burnelli soon reached the bridge to indicate, by sign language, a shell hit in the engine room just above waterline. After entering the starboard bulkhead, the shell had ricocheted downward through the bottom of the hull. What Burnelli did not report was that as soon as he pinched himself to see if he were still intact, he had yanked off his kapok life jacket and stuffed it into the jagged hole, thus preventing the boat from immediately sinking.

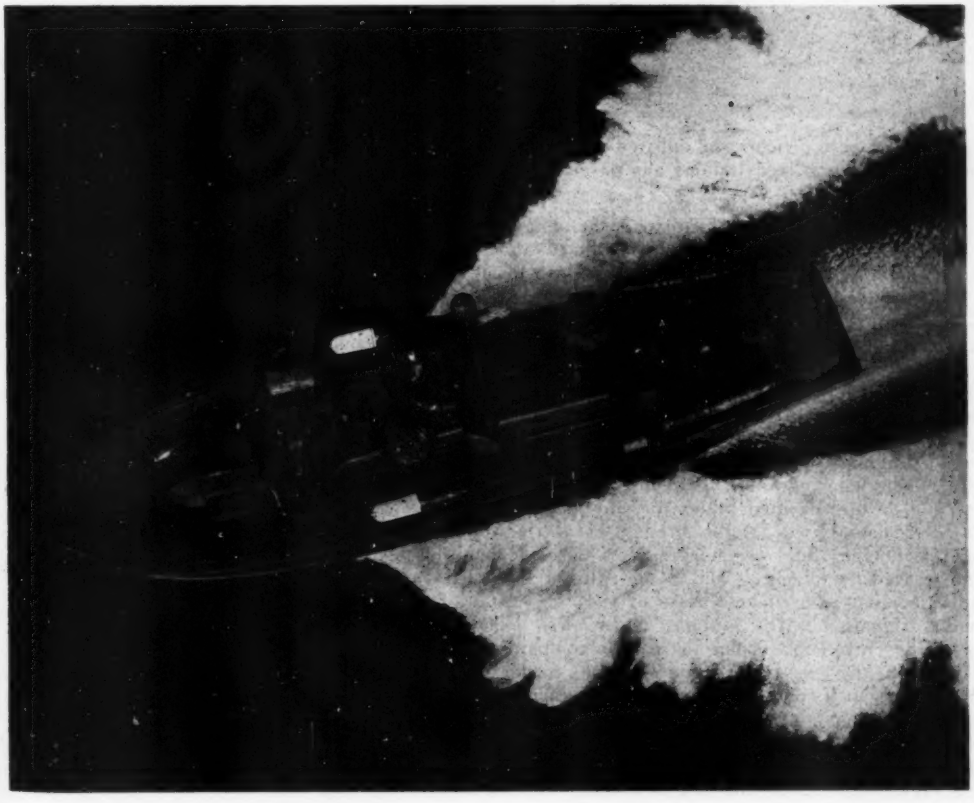
As Burnelli returned to his station, Radioman Sekerek bolted out of the chart room to report that the electrical power was dead. Then a blinding flash and terrific concussion amidships drove those on the bridge aft against the ready-room canopy. Stunned and blinded, Brown reeled forward to grasp for the chart house hatch. Carter grabbed the wheel and instinctively headed the *Carole Baby* beachward.

As the Skipper fumbled open the hatch, he discovered that most of the chart room and all of the instruments had been blown away. Radioman Sekerek reported that two crew members had been killed at their forward battle stations from the projectile that had disintegrated the chart house.

The explosion apparently satisfied the Japs for the gunfire and searchlights winked out simultaneously. This was surcease from immediate and complete destruction for the *Carole Baby*. But she was sinking by the minute, and Carter's opened throttles received but small response. The engines, now submerged in salt water, conked out one by one—the last cutting out just as the bow bumped and scraped onto a small coral reef fifty yards from the Jap-held shore.

As the officers climbed down onto the reef to survey the situation, Motor Machinist Taylor reported that two 4.7 shells had pierced the after stowage compartment during the barrage. Both hits had entered broadside above the waterline and continued through the mahogany planking and plywood bulkheads without exploding.

Skipper Brown called roll and discovered all hands present except the two casualties. Four of the group had powder burns and shrapnel wounds which were treated. Then, worried about the security of his present position, Brown swam to the beach, conducted a quick reconnaissance, and beckoned a volunteer cadre of heavily-armed PT sailors to follow. Stealthy exploration through the tangled, mouldy jungle revealed a grounded



**With a keel of spruce, double mahogany planking and tough plywood, the PT is swift and hard-hitting**

telephone wire but no Japs. The wire was severed and the party returned to the coral reef.

The remainder of the night was a technicolor nightmare of gunfire and explosions, but Lieutenant Brown and his battle weary crew were no longer the target. The Seventh Fleet, consisting of rebuilt warships resurrected from the depths of Pearl Harbor, was trading lethal blows with the Japs and the fireworks were terrific. This was cold comfort to Brown's crew for they were not to learn of the Seventh Fleet's smashing victory until later.

At daybreak three PT's roared by the tiny island and although all hands on the reef waved, shouted, shrieked and blinked flashlights, they were unable to attract the attention of the friendly boats.

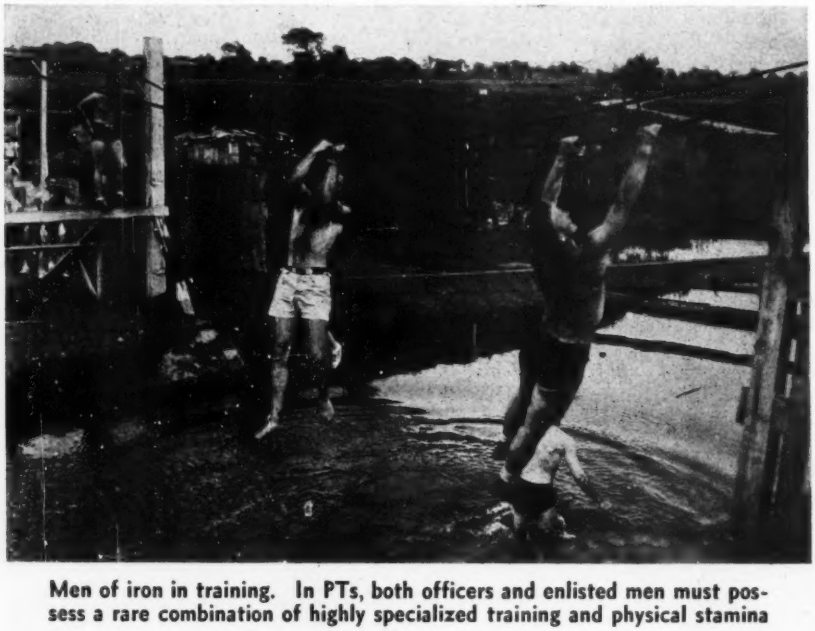
Minutes later, a slow-moving Jap heavy cruiser, apparently afire in the after deck house, passed the reef headed south for the open sea. One of the crew members, watching through binoculars, spotted a PT racing toward it. Coming abeam of the enemy, the PT wheeled and fired two "fish." Every gun on the battered cruiser seemed to belch flame simultaneously, but the small, bouncing torpedo boat zig-zagged and weaved its way toward the beach and safety.

Brown exchanged friendly signals, and as it eased toward them, the crew recognized the boat and Thronson, the skipper, who had been under such intense fire earlier in the morning.

The shell-torn *Carole Baby* was shoved out to sea where it promptly sank with its bow up. Brown and his crew were returned to their base, and the two crew members who made the supreme sacrifice were returned to Leyte for Christian burial.

The division of McElfresh, Brown and Thronson was credited with sinking two enemy war vessels. "But we were so busy with our own problems," Lieutenant Brown recalled, "that we aren't claiming anything. We were probably under fire only a total of five minutes, but it seemed like fifteen weeks."

This was not a typical PT patrol but it does tell of the punishment meted out to one wooden boat and its doughty crew. It is in keeping with the brief but fantastic history of the motor torpedo boats and their crews that both can give and take a terrific beating in jousts with the enemy or the elements.



**Men of iron in training. In PTs, both officers and enlisted men must possess a rare combination of highly specialized training and physical stamina**

Wood had often been substituted for metal during war periods of critical shortages and metal has sometimes been substituted for wood, but there apparently is no suitable metal substitute yet discovered for the double mahogany planking, the sturdy spruce keel, and the plywood used in the construction of United States torpedo boats. This fact was forcibly brought out during the first and second "splinter derbies" held in Long Island Sound during the PT experimental days of 1941.

The "splinter derby" was a 200-mile race open to private companies interested in selling PT boats to the government. The set-up was rather unique in that the Navy was represented—and by an aluminum boat constructed by the Philadelphia Navy Yard.

On the day of the first race, won by a boat entered by the Elco Boat Company, the sea was calm. This fact caused some complaint among the other entries, however, and a second derby was conducted. For this, the weather was such as to test the sturdiness and seaworthiness of any craft. There was a raw wind, rain, and a choppy sea. The Navy aluminum craft, PT 8, finished in its usual last place.

At one point during the race the aluminum boat dropped from the crest of a mountainous wave to its trough and three crew members blacked out. Later, most of the crew were hospitalized from the combination of rough sea and a stiff non-yielding hull. Lacking the resiliency, flexibility and quick repairability of wood, the use of aluminum and other metals as the framework and "skin" of a high-speed torpedo boat was abandoned.

The rapidity and ease with which the hulls of the wooden boats can be repaired is another important factor in their successful operations against the enemy. Although the boats are sometimes casualties of enemy shells, reefs, or storms, they usually can be quickly repaired by base carpenters and readied for patrols within hours, if necessary.

The genesis of wooden torpedo boat development dates back thirty-eight years to the Italians. Little attention was given to these tiny, lethal craft until 1917 when two motor torpedo anti-submarine craft, designated by the Italians as MAS boats, staged a daring attack on two Austrian battleships. One, receiving a direct torpedo hit, sank in a matter of minutes; the other was also hit, but only slightly damaged. Both of the agile MAS escaped during the confusion.

Since that night, naval tacticians the world over have been "sweating out" strategy for combatting enemy torpedo boats. Development of an effective PT boat lagged in this country until General Douglas MacArthur was asked to strengthen the Philippine Army in 1937. He knew about the gathering Nipponese war clouds. Since he lacked a huge fleet of warships at his command, he reasoned that flotillas of fast, maneuverable PT boats might be the answer in defending the thousands of islands which make up the Philippines. His enthusiastic plea for their development, however, met with a cold response, for the world was at peace and the United States seemed secure from attack.

Even the United States fleet was uninterested. The Navy was keenly aware of the coming war but lacked funds and public support to build enough major combat vessels to adequately defend our shores. In addition to original cost, the PT's would require funds for upkeep, training and maintenance. Because of

their limited range, they could not operate as a fleet unit and their usefulness would probably be restricted to coastal defense. General MacArthur, however, did not leave Washington until he had interested Admiral William D. Leahy, then Chief of Naval Operations, in his project. A bill specifying an appropriation for PT development was introduced and passed in Congress.

The evolution of the present PT is a long story of arguments, changes in design and compromises, but it was evident from the beginning that there could be little compromise in the quality of the crew members. On many occasions PT sailing is an tranquil as rowboating in Central Park, but in stormy weather it is about as smooth as a ride on an untamed bronco.

Since destroyer service had been considered "the roughest in the Navy," the first recruitment of PT volunteers in 1939 was opened only to men of the "tin cans." The number of volunteers far exceeded the openings. Volunteers had to pass a rigid physical examination. Other "musts" were that the applicant be single, between twenty and thirty-five years old, and agreeable to reenlistment. Those who qualified were selected for PT service by interview.

Early in 1940 several experimental boats were tested in Florida by the baby PT organization. Each boat was purposely given a terrific pounding in all types of seas. As one of the veteran PT sailors explained it, "we just had two speeds when we were trying them out—wide open and idling ahead." Out of the broken, beat-up hulls of the early craft has evolved a torpedo boat approximately eighty feet long and twenty feet wide which is seaworthy, speedy and maneuverable.

When the war started, the PT program opened its ranks to Reserve volunteers who could qualify on essentially the same basis as the men of the destroyer service. A training center was established at Melville, Rhode Island, in March 1942.

The entire PT philosophy and basis of training was ably stated by Commander D. J. Walsh, U.S.N.R., present commanding officer of the training center, in a recent message: "In PT's, officers and enlisted men must possess a rare combination of highly specialized training, physical stamina and an unrelenting spirit of aggressiveness to hit the enemy telling blows again and again. It is these characteristics plus the all-important factor of teamwork, worked out to its highest degree, on each hard-hitting PT which have enabled these tough, swift craft to become the scourge of enemy surface units . . ."

It is not surprising, therefore, that husky reserve officers and men who had an outstanding background of athletic accomplishment were usually given the preference when selecting volunteers. It was reasoned that the type of individual who combines a rugged physique with trained reflexes—or the ability to think and act instantaneously — would most likely react best when in action with the enemy.

The selection of physical giants holds particularly true for officers. The optimum in size was reached when Squadron Twenty-One was commissioned and fitted out in New York City. Each officer was hand-picked by Captain S. S. Bolling, U.S.N., who now commands all of the PT squadrons of the Seventh Fleet. Their height averaged better than six feet, their weight 205 pounds plus.

It may sound paradoxical that such brawny specimens should be selected for duty on small boats. This factor was anticipated in the original boat design, however, and the size of the watertight doors, bunks and head space below deck is comparable or more adequate than on the larger vessels of war.

Actions which speak for the stamina and ruggedness of men and boats are numerous in their battles against the enemy and the elements. A tanker, on the deck of which were six new PT boats en route to a forward area, was struck by a torpedo 100 miles south of Noumea. When the order "abandon ship" was given, the PT and armed guard complement remained at their gun stations to protect the floundering ship from the enemy, and also to do everything possible to free the PTs which were mounted in huge wooden cradles and securely lashed.

The tanker sank by her stern. But all PTs were floated clear, two of them sinking immediately because their bottoms had been ripped out by the initial torpedo hit. The four remaining boats were floated safely away by the determined crews, despite gaping holes in their bottoms, cracks in their ribs and stems, and bent screws, shafts and struts. When a rescue destroyer arrived, three of the boats were taken in tow. The remaining PT sailed into Noumea under her own power. All four were repaired and sent to the combat zone a week later. On the tag end of the Navy report of the incident is this statement: "In general the damage is amazing testimony to the rugged construction of these boats."

**The rapidity and ease with which the PTs can be repaired is one of the most important factors in their successful operations against the enemy**

The report may have added that the saving of four out of six boats was due to the initiative, judgment and courageous conduct and physical stamina of Lieutenant Russell W. Rome, senior officer, and his sturdy cohorts.

One of the PTs rescued from the tanker had another weird experience after several months of patrolling the Solomans. A torpedo, released by a Jap bomber, drove through the boat without exploding, leaving a gaping hole just aft of the bow and several feet above waterline. The torpedo cluttered up the crew's washroom, but inflicted no personnel casualties. The PT was quickly repaired and in operation against the enemy.

The men and PT boats sent to aid the

(*Turn to page* 252)

# NATIONAL TRIBUTE GROVE

## OF EVER-LIVING REDWOODS

### To Honor the Men and Women of the Armed Services in World War II

By AUBREY DRURY

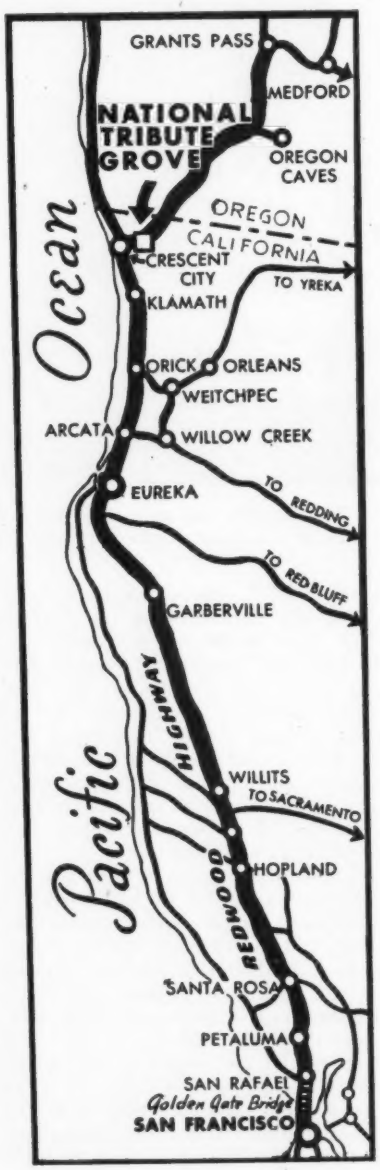
THE "eternal gratitude of the nation eternally expressed" is to be symbolized in a way most appropriate by the National Tribute Grove of ever-living redwoods, established and preserved as a tribute to the men and women in the armed services of the United States in the present war.

At a recent meeting in Sacramento, the California State Park Commission officially gave the name National Tribute Grove to a magnificent primeval redwood forest within the state park system in the Mill Creek—Smith River region in Del Norte County. It is on the Redwood Highway five miles northeast of Crescent City, and four miles, airline, from the Pacific Ocean.

The supreme examples of the Coast redwoods (*Sequoia sempervirens*) long have been regarded as a national heritage, and now this primitive forest notable for its size and beauty to be set aside as a testimony of undying thanks will be looked upon as a sanctuary and shrine by all Americans. Administration of the grove will be by the State of California, proud to have such a precious possession within its borders. The neighbor State of Oregon, its southern boundary only twelve miles from the grove, is gratified likewise. Indeed, nationwide appreciation and interest are being manifested in a remarkable manner.

It was emphasized at the Sacramento meeting that at least $260,000 must be raised if the grove is to be completed in accordance with the plan and with the terms of a purchase agreement now in effect. This would add—in the very heart of the grove—approximately 1,400 acres of giant redwoods adjacent to Mill Creek and Smith River. Some of these acres are among the most heavily forested in the world. By action of the California State Park Commission, this primitive forest, when added to the park lands, will become part of the National Tribute Grove. Naturally, attention is focused from the outset upon this urgent addition.

Selection of the grove and decision on its boundaries are determined by the commission upon the advice of Frederick Law Olmsted, internationally-known landscape architect who made the basic state park survey for California, and who for this project has made a survey of the entire northern redwood belt. Upon completion of the program more than 5,000 acres of the finest redwoods will be included in the National Tribute Grove, comprising an area appropriate to the great purpose it is to serve.

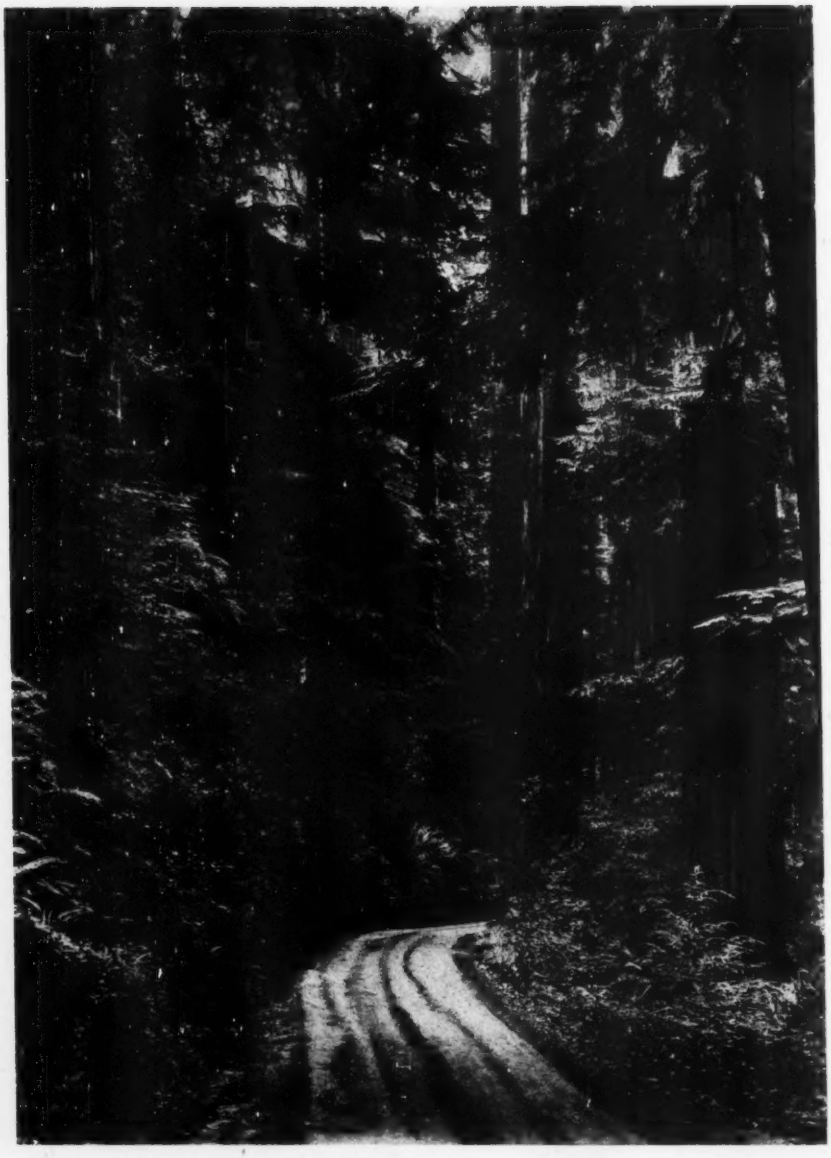



The grandeur and beauty of the individual redwood giant has been abundantly praised—its stately poise, its fluted "wine-red shaft," its graceful foliage so high above the ground. Yet much remains to be said and written about the vast redwood forest, made up of such titan trees in massed formation, acre beyond acre. And truly here "a forest does not consist of trees alone," for the redwoods are companioned by lesser growth, shrubs and flowers and man-high ferns in luxuriant profusion, often prolific beyond belief.

In the Mill Creek—Smith River forest are hundreds of redwoods which are around 350 feet high, among the tallest of all trees. Many are from twelve to seventeen feet in diameter, measured five feet above the ground. From authentic scientific data collected about the Coast redwoods, it is known that some are more than 2,000 years old. They were upstanding young trees at the time of Christ, giants when Columbus came to America. They have survived through the tragic yet hopeful era of World War II, and they and their companions of the forest shall continue to thrive, on and on, through the centuries, living monuments of beauty, honoring the members of our armed forces.

"They also serve who only stand and wait." Here the ancient trees have stood, waiting, waiting. Now at long last has come a fruition, that service beyond all reckoning which *they* can render—no other living things so fitly

**In the heart of the Grove—where the "eternal gratitude of the nation eternally expressed" is to be symbolized**



**In the Tribute Grove the "forest does not consist of trees alone," for the redwoods are companioned by lesser growth in luxuriant profusion**

as they, the high-spiring redwoods of Mill Creek forest.

It is significant to reflect that these redwoods are a saved remnant. "Instead of stone or concrete," says Dr. Ray Lyman Wilbur, chancellor of Leland Stanford University, "this monument is made up of living trees, survivors of centuries of combat with storm and drought, fire and flood. These magnificent trees have won in the inevitable struggle that takes place in the interplay of the great forces of nature. They represent the survivors. They stand now like pillars in a great cathedral. We need to contemplate them in order to balance off the smoke and dust and grime of that industrial life which we call civilization. We need havens of rest such as this."

Countless thousands will come here, down the years, to pay homage. Parents, kindred, children, travelers from afar—and members of the armed services, some among them the very ones whom this grove honors—all these shall come, to wander and wonder in this primal forest wilderness. In the varying seasons they shall come, taking note of the bursting flower-flood of spring, with its trilliums and fairy lanterns, wild violets and oxalis; and then of the spectacular rhododendrons in the heart of the redwoods, and the azaleas on the fringes of the forest; and, in the autumn, the tapestry colors, russet and yellow, of the stream-side trees. A year-round pageant of beauty is here presented in the wildwood, a solace to all who come, *whenever* they come.

This grove selected as the National Tribute is noble and majestic, a true wilderness area, yet notable also for its accessibility. It is traversed by the Redwood Highway, a main route of travel, and in time the forest may be entered from the highway by auxiliary roads as well. A scenic rambling route, the old county road, winds into the southern part of the grove from Crescent City over the Howland Grade, and follows along a branch of Mill Creek. Trails lead throughout the grove and along the river, presenting vistas of varied charm.

Writing of the Mill Creek redwoods, Dr. John C. Merriam, one of the three founders of the Save-the-Redwoods League, says:

"Mill Creek was included in the original group of major types of redwood forests which the Save-the-Redwoods League desired to see protected for park purposes because it offered a large and exceptionally fine primitive area at the northern end of the redwood range and on the eastern or sunny side of the redwood belt. Investigators . . . . recognized the Mill Creek area as not only presenting one of the finest stands of timber in completely primitive condition, but were equally impressed by the fact that it illustrated a type of forest quite different from that of the areas to the south.

"A feature of the Mill Creek forest which has large appeal to all who see it is its primitive or original nature character . . . representing unmodified work of the Creator."

It is recognized that the redwoods in the vicinity of Mill Creek rank among the very finest. "This is the largest and heaviest stand of timber I have ever cruised," declares Enoch Percy French, superintendent of State Parks, Northwest District. The National Tribute Grove, embracing the heart of this forest, is indeed superb.

Added interest in the region comes from its association with the American explorer and pathfinder, Jedediah Smith, who traversed these redwood lands in 1828 at the head of a party of hunters and trappers. In May, 1827, he had led the first party of white men known to have crossed the Sierra Nevada.

C. M. Goethe comments on Jedediah Strong Smith in his book, *Sierran Cabin . . . From Skyscraper:* "This frontiersman had been nicknamed 'Bible-Toter Smith.' Though deeply spiritual, he knew the wisdom of breaking tension with humor. . . . When one looks at the Stars and Stripes one may well think

that California's—the thirty-first star—arrived there because, more than a century ago, Bible-Toter Jedediah Smith could remember, when he almost forgot his own name, the text of the help-giving Mountains: 'I will lift up mine eyes unto the Hills, from whence cometh my strength'." And from the giant forests, too, he drew courage and inspiration.

Only a few days after Smith left the river which bears his name, almost his entire party was wiped out in an ambush by hostile Indians on the Umpqua River in Oregon. Only the pathfinder and two of his men escaped. Such were the ever-present perils in the winning of the West.

It is of abiding importance that the vast wooded wilderness of the Smith River watershed, of which the Mill Creek forest is a part, is linked so closely with the great American tradition, with the adventurous pioneering spirit, with our national heritage of courage, enterprise, self-reliance and self-sacrifice for the common good. Influence of the national aspects of this grove's background is far-reaching.

The proposal to create this fitting and imperishable tribute was made by the Garden Club of America to the Save-the-Redwoods League. It is outlined in a letter to the directors of the League from Mrs. Joseph M. Cudahy of Chicago, on behalf of the Garden Club, which reads in part as follows:

"That a large area be set aside as a National Tribute Grove in honor of the men and women of our Armed Forces in World War II, to those who live as well as to those who have made the supreme sacrifice.

"That a National Committee be formed to sponsor this project, comprising men and women representing various localities in the United States, who have a particular interest in conservation.

"That citizens throughout the nation be reached through a wide publicity appeal and asked to honor both relatives and friends by sending contributions to this National Tribute Grove.

"That the names of those so honored be inscribed in a book (or books) and that this book be kept in a suitable repository in the county in which the grove is situated and a duplicate book be placed in the National Archives in Washington.

"The Garden Club of America has signified its intention of sponsoring such a project and has set aside $5,000 as its contribution to this National Tribute Grove. It has directed me as its representative to express our very deep interest in this proposal for a National

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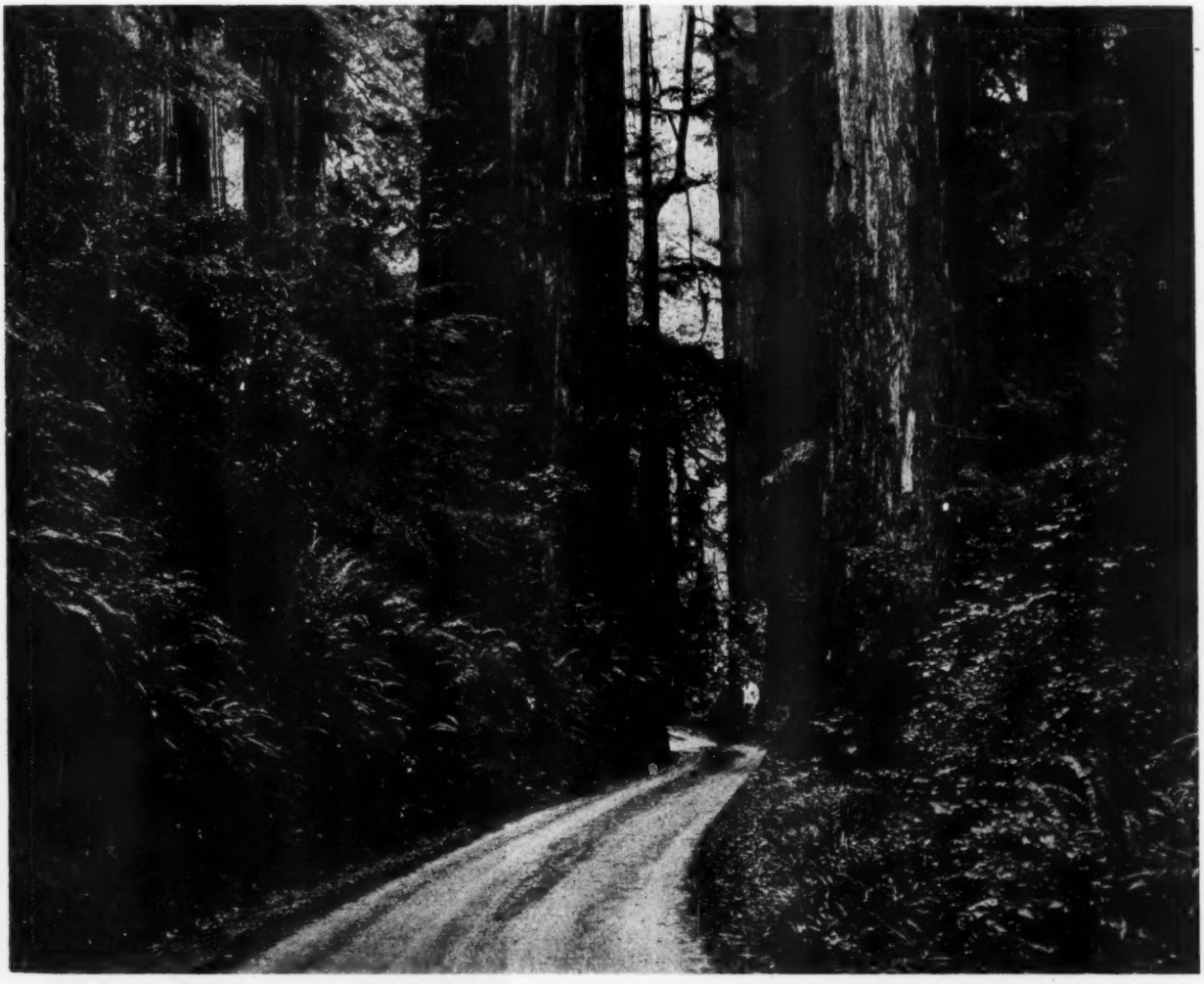
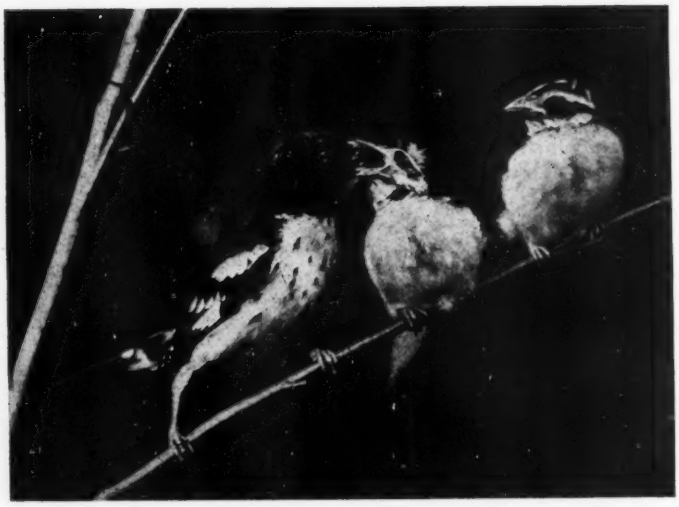


**The Tribute Grove lies in the Mill Creek-Smith River region of Del Norte County, California, at the northern end of the redwood range. It is traversed by the Redwood Highway, though this view is along the old Mill Creek road**



# THERE IS NEVER

By GRACE V. SHARRITT

MAY is like that furlough home. There is never enough. Every moment counts. Each precious hour is touched with fleeting sadness but great joy, — joy for the daily round of pleasures, sadness at the thought of parting.

May is not a month to be taken lightly. You must know her intimately, like robins know rain and violets the sun. You must overlook her moods and take her as she comes. If there is high wind and storm, remember the warm sun of yesterday or the promise of a fresh dawn tomorrow. For each second of Maytime is a cup overflowing with thrills and reflections, with tears and laughter. Maytime is life, — bittersweet sometimes but like a pomegranate ripe on the trees, ready to be picked.

There are only thirty-one days in May. Yet that small number, as subtracted from the three hundred and sixty-five of the calendar year, finds many of us busy indoors. We *mean* to take that walk to the woods, or that jaunt into the marsh, — just roaming around beneath the skies, hunting nothing in particular but reveling in the songs of redwing blackbirds and meadowlarks and the scents of mosses and tree-roots and sod. We do too, eventually.

But half of us do not derive the healthful, inspirational good that we should, getting reacquainted with the sun and the winds and the spring blooming trilliums, fantastic mushrooms and all the other jewels May has hidden in her treasure poke, — a poke tied with blue wings of indigo buntings and spilling over with pastel anemones and tree buds.

# ENOUGH OF MAY

It is seizing the present when you walk with May. It is extracting the ultimate from that furlough, — each moment fraught with change. A fern leaf unfolds before your incredulous eyes. A butterfly tries fresh wings, still moist with cocoon protection. You can almost *see* a hickory bud petaling into flower. There is awe and wonder and a lusty down-to-earth feeling in all you see and taste and hear.

But there's so much more. The catbirds are nesting in the forsythia bush and cardinals in the honeysuckle. Chipping sparrows have taken for their own a fragrant green branch of the blue spruce and the wrens are again trying to housekeep in that ridiculous overturned flower pot on the back fence. Bird songs are everywhere. But above them all, like the chimes of far off bells, the wood thrush trills of home and love and the permanent endearing things of life.

This is the month of May, — the *one* out of twelve. Like those precious furlough days of leave, you want to remember each incident, each sound, each delicious tremulous moment. You want to imprint them forever upon your mind and heart.

You remember things that had long been forgotten. You want to pray. Not in words but an unspoken prayer, lifting the spirit, — a prayer of thanksgiving for May. A prayer of thanksgiving that the crimes of war and hate and greed cannot despoil May, — May of singing thrushes with a crown of yellow dandelions in her hair.

May that is like a furlough home. So poignantly, heartbreakingly brief.

# MICHIGAN FORESTS—A GREAT RESOURCE

By J. A. DONERY

**This article previews the findings in Michigan of the Forest Resource Appraisal of The American Forestry Association. Other states will be similarly presented in forthcoming issues.**

IF LONG sub-titles were in style this piece might carry one reading: "A report on what aggressive state and federal agencies can do to promote forestry when supported by public interest and assisted by far-sighted industrial owners, and a warning as to the damaging effects of war requirements upon such progress." For it is a fact that forestry has made splendid strides in Michigan, so that timber is growing upon almost all of its 19,000,000 acres of forest land. But it is also apparent that wartime demands for lumber are impelling woodland owners to sacrifice many small trees which should be left to grow to larger size.

Michigan has been an important contributor to the nation's lumber pile for more than three quarters of a century. From 1870 to 1900 the state led all others in lumber output. Forty years later the annual cut of sawn products exceeded 400,000,000 board feet, and it has averaged just under 500,000,000 feet over the subsequent five-year period. Last year it is believed to have gone above 517,000,000 board feet.

Pulpwood has become firmly established as a valuable crop, its annual production approximating 350,000 cords. Possibly 3,500,000 cords of fuel and chemical wood are cut each year or salvaged in connection with logging operations. Cedar poles and posts make up another item of 140,000 cords, in normal times. At present, with labor shortages and emphasis upon sawn products, the output of these forms of wood has fallen somewhat below the levels indicated above.

Aware of Michigan's importance in the forest products field, The American Forestry Association designated this state as one of the first group to be covered in its nation-wide study of war's effects upon forest resources. It was deemed desirable to examine the land which has been the source of so much usable material, to ascertain the extent and character of present-day timber stands, to consider the conditions of

A million of Michigan's 19,000,000 acres of forest land is in pine. Here are samples of old growth red pine

Hardwoods occur on 12,000,000 acres. These trees—sawtimber ripe for cutting—are in the Upper Peninsula

**From 1870 to 1900 Michigan led the nation in lumber production—has averaged 500,000,000 feet yearly for past five years. Meanwhile, new forests are growing. Here is part of the 67,000 acres now in red pine reproduction**

protection and management, and with such facts to forecast probable postwar contributions to the national wood output.

Several years ago, the Lake States Forest Experiment Station of the U. S. Forest Service conducted a survey of the state's woodland resources and embodied its findings in a report, *Forest Areas and Timber Volumes in Michigan*, issued in June, 1936. Since that time the station has cooperated with the U. S. Census and the forest industries to keep records of yearly drain. In 1940 the Census issued a compilation of "Areas of the United States," which establishes with greater accuracy than ever before the gross acreage in all counties of this as well as other states. With such basic information from federal sources and many recent maps and reports prepared by the Department of Conservation and by other state agencies, we set about the task of bringing the facts up to date.

Field examinations were made in each county, to determine acreages and volumes by forest types, size classes and products. This field study also checked on present and recent utilization, on management, fire protection, taxation, and the attitudes of local people toward public and private forestry. Local checks were obtained upon timber cutting and natural losses, to round out the drain picture.

On the advice of the Michigan State Department of Conservation, basic data for estimating growth were obtained from the Lake States Forest Experiment Station. Valuable material came also from the School of Forestry and Conservation of the University of Michigan, from the Extension Foresters at Michigan State College and from several foresters in private employ.

The findings which are to be summarized here should be regarded as tentative and subject to certain later revisions. Additional growth data may become available; a formidable array of county questionnaires is still being studied; and further careful checking of species and volumes may disclose need for local corrections. However, we present this material with confidence that it is a conservative summary of the state's forest resources.

Nineteen million acres, or more than half of Michigan's area, should be classed as forest land. Today, in the Upper Peninsular, 1,357,000 acres of land bears old-growth sawtimber, meaning that these areas support stands of 2,000 board feet or more of sawlogs, and that at least half the volume is found in trees fifteen inches or larger in diameter at breast height. Upon 645,000 acres there is second-growth sawtimber, running 2,000 board feet or more an acre but having fifty percent or more of this volume in trees between nine and fifteen inches, breast high diameter. A considerable area, estimated at 1,572,000 acres, bears stands of less than 2,000 board feet but containing at least three cords an acre of wood in trees too small to make sawlogs. And 4,524,000 acres is classed as restocking, which means that the ground is fully or partially stocked with young growth ranging from seedlings or saplings to small poles. Finally, we estimate that 1,204,000 acres has little or no promising tree growth. All this adds up to 9,302,000 acres in the Upper Peninsular.

Old growth areas are smaller in the Lower Peninsular, aggregating 264,000 acres, while second growth sawtimber is found on 269,000 acres. Of cordwood stands there are 1,527,000 acres, and of restocking areas, 5,260,000 acres. Out of a total forest area of 9,698,000 acres, 2,378,000 acres is classed as deforested. Two-thirds of this at present denuded area lies in the northern half of the Lower Peninsular.

The primeval forests of Michigan were wonderfully varied as to species. Logging began in Lower Peninsular white pine stands, and gradually red or Norway pine and hemlock came into merchantability. Still later the cedar, tamarack and spruce in the swamps and spruce and balsam fir of the northern highlands became valuable. Yet, during the greater number of years of her lumbering history, the state has been most famed for magnificent hardwoods; sugar maple, yellow birch, basswood, elm, oak and beech. And, of course, there are other hardwoods, less highly regarded.

Today her stands of old growth softwoods are negligible; her high-grade hardwoods are to be found chiefly in

**Hardwoods seed in great variety and abundance in the Upper Peninsula**

the virgin stands of the Upper Peninsular and in a great number of farm woodlots, located largely in the southern part of the Lower Peninsular. Between these widely separated remnants of old growth, and also to a degree intermingled with them, is a tremendous acreage of younger forest, representing all of the hardwoods originally found here, and the desirable softwood species as well, but given over on a truly formidable scale to such formerly despised trees as jackpine and aspen.

It is estimated that the pines occupy slightly more than 1,000,000 acres, with white pine upon 171,000 acres, red pine on 83,000 acres and jackpine accounting for the balance, a matter of seventy-five percent of the area. Hardwoods occur upon 11,606,000 acres, with hemlock intermixed over 4,576,000 acres. Bottomland hardwoods persist upon 680,000 acres, while aspen has taken over about 5,000,000 acres. The highland spruce-balsam fir area amounts to 1,420,000 acres, and there are 1,368,000 acres of swamp, supporting cedar, spruce and tamarack.

In early lumbering decades, little attention was paid to the protection of cutover lands, or even of uncut timber, from fire. As in other parts of North America, forests were harvested wastefully and without thought as to the desirability of growing later crops of trees. Because of such treatment forest regeneration was long delayed upon considerable areas, and often nature reseeded but sketchily or with inferior species.

Michigan is a great state, with varied manufacturing industries of world importance, sustained at least in part by minerals from her own mines and wood from local forests. Her agriculture makes productive use of 12,637,080 acres over and above farmer-owned woodlands. Present population is in excess of 5,000,000 and these people understand that forests are important to them. It is claimed that demand for outdoor recreation facilities was the dominant force which made possible the development of effective forest protection and ultimately of a diversified, aggressive state forestry program. There were other important influences, including helpful federal action of many kinds, leadership of men who understood the economic importance of growing trees for commercial use, and favorable tree-growing conditions.

During the decades while forestry grew to its present stature, certain developments followed harvesting of the primeval stands. Large areas of cutover lands were forfeited by their owners for non-payment of taxes. Yet a law which was enacted in 1925 to encourage growing of private forests by fixing annual taxes at five cents an acre, subject to a yield tax upon the mature crop, finds present application upon only about 100,000 acres. Forest land taxes do not appear to be a real barrier to timber growing in Michigan. At present forfeiture continues in the poorer classes of lands, yet it is related to year by year business conditions.

An inevitable result of long-time tax delinquency and of the failure of land owners to regard forestry as a sound enterprise, is large scale public ownership of forest property. Approximately 4,500,000 acres are vested in the state, and 2,500,000 acres have been acquired by the federal government. This adds up to twenty-seven percent, albeit largely of poor quality and low productivity. The remainder of the forest land and about ninety percent of all merchantable timber is in private holdings, ranging from single "forties" to aggregations of 500,000 acres or more.

Fire protection is provided on national forests and intervening areas by the U. S. Forest Service, while the Michigan State Department of Conservation protects state and private areas. There is some criticism of the effectiveness of control over marsh burning and farm woodland fires in the southern part of the state. However, for the entire state, the average number of fires occurring yearly over the decade ending December 31, 1944, is recorded as 1,606, and the number reported last year was 1,673. During the decade the burned over acreage amounted to 273,790 acres, while the figure for 1944 was 22,867 acres, or one acre out of 831.

Planting of trees of commercial species, largely conifers, on state forests was begun in 1904 and was continued practically without interruption until 1942. During that time approximately 200,000,000 trees were planted on 253,000 acres, resulting in restocking 220,000 acres. On the national forests in

Michigan, planting was started about 1911 and up to June 1944, some 473,000 acres had been planted, with net restocking of about 334,000 acres. Since 1909, private individuals, schools, communities and various other organizations have planted sporadically, placing some 66,000,000 trees upon approximately 82,000 acres. Farmers have set out 16,000,000 trees on 13,500 acres under Soil Conservation Service supervision. Aside from the educational values of widely distributed and long continued efforts at forest restoration, this man-planted woodland of more than 650,000 acres promises to yield very great wealth in high-grade timber. In the older plantations considerable numbers of trees are already approaching sawlog size.

Farm forestry is of great importance in Michigan. Timber from farm woodlots enters into lumber, railroad ties, and other sawn products. In addition the woodlots yield large quantities of high-grade veneer logs. Farmers of the present generation in this state, as elsewhere in America, have not been brought up to regard trees as a farm crop. Too often, through lack of knowledge, they fail to realize upon the productivity of their woodlands. This is particularly noticeable today when wartime markets readily absorb their immature trees. Forest extension and other programs, to instruct landowners in management and to assist them in marketing wood, are being carried on here, and the excellent results emphasize the need for much more of this sort of education.

Losses from insect damage in recent years have been confined almost wholly to young growth, natural and planted. Tree disease losses are considerable; in mature stands the volume reduction of otherwise merchantable material probably exceeds 2,000,000 cords a year. The blister rust is so widespread a threat to young white pine that the federal Bureau of Entomology and Plant Quarantine declares that only protected stands of this species can be expected to reach maturity.

While on the subject of losses, mention should be made of the damage to timber and reduction of growth caused by the pasturing of animals in woodlots. In the northern sections, where woodlots are larger and numbers of livestock smaller, these losses are less serious than in the more intensively farmed southern counties. The opinion of many capable observers is that woodlot pasturing causes more damage than uncontrolled fires.

Some farmers are wastefully cutting immature white pine

Removal of mature hardwood leaves reproduction only in spots

As of the close of 1934, the U. S. Forest Service reported Michigan's stand of sawtimber at 28,549,000,000 board feet, of which almost exactly two-thirds was hardwood, and the balance softwood. Timber of cordwood size was reported at 97,947,000 cords, of which 15,117,000 cords was suitable for pulpwood.

We estimate that today the sawtimber stand is 24,883,000,000 board feet (International Log Rule used then and now because it most nearly expresses probable lumber yield from such standing timber), the proportions of hardwoods and softwoods being very nearly as they were ten years ago. Total standing cordwood is now estimated at 80,630,000 cords. Incidentally, we esti-

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Charles E. McManus—corkateer

# CORKATEER

## Charles E. McManus Believes This Country Can and Should Grow Cork Oak — and He's Backing Up This Belief by Giving Away Millions of Seed and Seedlings . . . . . .

By CLIFTON F. SCHMIDT, JR.

BACK IN 1939, when Charles E. McManus, president of The Crown Cork and Seal Company, was riding through the countryside of California, he noticed trees along the highway that reminded him of the cork oaks he had seen while visiting Spain. He was told, however, that they were native "scrub oaks."

But Mr. McManus was not convinced. The similarity between these "scrub oaks" and the cork trees of Spain was too great. Finally, when his car came to a halt at Leland Stanford University, a close inspection of one of these trees growing on the campus proved it to be a cork oak. He requested permission to remove the bark, examination of which convinced him that it was an excellent quality of virgin cork. Subsequently he had bark from a number of trees shipped to his company's research department. There it was found that American grown cork could be used interchangeably with imported cork.

This was the genesis of the McManus cork growing program, the objective of which is to stimulate the planting of cork oaks in this country and in time develop a domestic source of a commodity useful in every American household. Under the program, cork oak seedlings are distributed free to landowners who agree to plant and care for them. They are planted in groups, along roadways, as fence borders, or as shade trees in pastures. After planting, the trees become the property of the landowners.

The program, initiated in California, succeeded so well that, in 1941, it was expanded to include the South where a few cork trees, which are evergreen and belong to the live oak family, were known to be growing. And early this year, a truck bearing more than 12,000 pounds of seed set out from California to distribute acorns from Arizona to South Carolina. Thus the range and scope of cork oak plantings have been extended from coast to coast. Since 1939, the McManus cork growing program has been responsible for the distribution and planting of more than 3,000,000 acorns in twenty-seven states. This achievement is due in large measure, Mr. McManus will tell you, to the cooperation of foresters and other interested citizens in the cork growing areas.

While the majority of seedlings distributed have come from parent stock

This truck, traveling from the Pacific to the Atlantic, distributed for planting en route twelve thousand pounds of acorns from California cork trees

growing in this country, Mr. McManus, in 1943, under a cooperative agreement with the United States Forest Service and the Spanish Government, was granted permission to collect up to 10,000 tons of cork oak acorns in Spain. Due to delays occasioned by war conditions, only 15,400 pounds were obtained. In 1944, more acorns were brought in, this time from North Africa as well as from Spain. And, thanks to faster shipping facilities, the 1944 acorns resulted in a higher percentage of germination than the 1943 crop.

Slow transportation and lack of refrigeration, incidentally, had much to do with the failure of earlier attempts to establish cork oak in this country. Another reason, according to Thomas Jefferson, was nonchalance on the part of the early planters.

Now that quick shipment is possible and the collection of seed pretty well understood, Mr. McManus plans to bring unlimited quantities of acorns from Mediterranean trees to plant in this country. In this manner, it is believed, a solid foundation can be established upon which the nation can eventually build a substantial cork growing industry. In normal times about 160,000 tons of cork are imported yearly.

To produce a good grade of cork in the Mediterranean area, its natural habitat, requires from thirty to forty years. The virgin bark is removed when the tree is from eight to twenty years old; the second growth is removed from seven to twelve years later; the third, from seven to twelve years. In other words, the tree cannot produce bark for the second stripping until the virgin bark has been removed, nor for a third stripping until the second growth has been taken off. In stripping the tree, only the cellular outer bark is removed; the living, fibrous, inner bark is left on the tree. Only when the inner bark is bared can growth of an improved quality of cork begin.

Each stripping stimulates the growth of the tree and increases its production of acorns. This treatment also produces an improvement in the quality of the bark until the fourth stripping. The quality of subsequent strippings remains uniformly good.

The large cork tree on the Napa State Hospital grounds in California, was reported to be eighty-five years old when

**Young cork oak in Alabama which has grown eleven feet in four years**

**Cork oak "nursing tube" which may extend its range 500 miles north**

**More than a thousand pounds of virgin cork were stripped from this eighty-five-year-old tree at the Napa State Hospital in California**

stripped, in 1943, of 1,050 pounds of virgin cork. Some of the outstanding trees in Portugal produce over 2,000 pounds per stripping at twelve-year intervals — trees that probably were saplings before Columbus sailed westward. In California, a ring of cork has been stripped from thirty-six year old trees. Four years later, a ring showing both the then forty-year-old virgin bark and four-year-old second growth bark was removed. The four-year-old reproduction in most cases just about equaled the thickness of the forty-year-old virgin bark. In one instance, the second growth was thicker than the virgin. This tends to bear out the statement that "the rich hills of California are so well adapted to cork oak growth that the trees grow almost twice as rapidly as in the Mediterranean districts."

As a food for animals, figures from Portugal show that one bushel of acorns will make six and a half pounds of pork. The estimated annual consumption of Portuguese pigs is 200,000 tons. Too, the acorns make an excellent food for many forms of wildlife.

**Plant a White Birch on Mother's Day**

**May 13 is Mother's Day — so why not honor your Mother by planting a White Birch? This custom, sponsored by The American Forestry Association, has been nationalized since 1923, and today Mother's Trees stand in the grounds of the White House, near the Tomb of the Unknown Soldier and beside thousands of homes where Motherhood is cherished. The tree chosen for this dedication is *Betula alba, laciniata.* Plant one this year.**

Two years ago, with 20,000 cork oak seedlings growing in the nurseries, it was dediced that the time was ripe for an intensive planting program throughout the cork growing areas. Governors of numerous states agreed to cooperate in stimulating such programs. As a beginning, cork oaks were planted on the grounds of seven state capitals as part of Arbor Day ceremonies. This stimulus had the desired effect: In Louisiana, a cork tree will be planted next year on the grounds of every school; more than 1600 members of the Future Farmers of America will plant one pound of acorns each; and, in Florida, following the dedication of a cork oak on the capital grounds at Tallahassee, one citizen planted 232 acres to cork.

Many other plantings are being made, of course, among cooperators. And additional governors have signified a desire to plant a cork tree on their capitol grounds. Where the capital cities are outside of the cork growing area, it is believed that trees can be established by using special strains of seed or species and, if necessary, a "nursing tube," developed by the writer. With this tube, it is believed that cork oak can be grown 500 miles north of its normal range.

After many attempts to root cork oak cuttings taken from a mature tree, Lester Helm, of the Fruitland Nurseries, achieved success in 1943. The following year, other rooted cuttings were produced in Georgia. In the spring of 1944, Gustaf Malmborg of Elizabethtown, Pennsylvania, exhibited grafts of the cork oak on oaks that grow in that state. The scions had come from a mature cork oak tree in Arizona growing at 4,520 feet elevation. It is planned this spring to bring pollen from Arizona and California to fertilize bloom on various oaks growing at Elizabethtown.

The bulk of work, so far, has centered around the better known European cork oak, *Quercus suber.* Examination of cork bark taken from trees other than *Quercus suber* growing in scattered areas of the United States has prompted an investigation of the possibilities of propagating these for producing cork. It is known only that the virgin bark of these trees is a commercial product in Russia and the Asiatic countries. Seed of the *Phelloden-*

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# SALVAGING WAR WOOD

By HENRY S. KERNAN

A DEFICIT of 8,000,000,000 board feet of wood is predicted between what America needs and what it will cut in 1945. This, in a country where nature has been so prodigal in growing wood that Americans for 300 years have been thoughtlessly wasting it. But a current paradox is that everyone must bend his efforts to conserve what has become one of the most critically short materials in the war program.

Eight billion board feet is double the deficit of 1944. This year total lumber requirements may reach an all-time high of 40,000,000,000 feet; whereas even with improved conditions of manpower and weather, output will barely reach 32,000,000,000—ten percent less than last year. Emergency measures have about reached their limit. Lost production is already a fact and is likely to continue so.

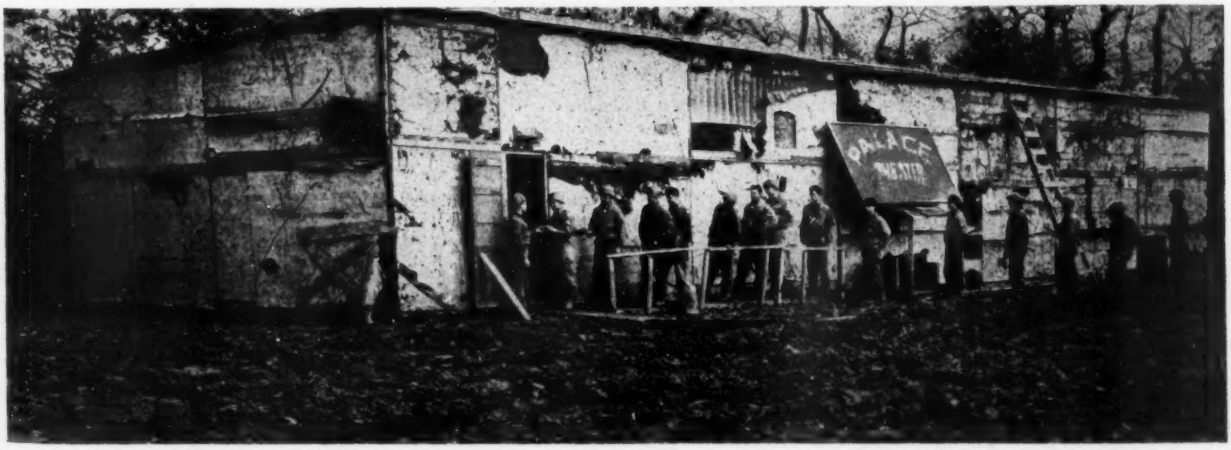
What part can conservation play in meeting such a crisis? As a critical material, wood excites less popular interest than paper, which is nearly 100 percent re-usable, or rubber with its hint of the romantic tropics and international intrigues. Wood is that plain, homely stuff growing even in the backyard and surrounding every step in life. Americans do not think of it as scarce—until they get overseas with the Army or Navy. There every stick is salvaged with an almost ferocious intensity; and the efficiency and ingenuity displayed make a fascinating story.

"Ten minutes after a load of boxes was emptied," said one veteran, speaking of Guadalcanal, "you could not find enough wood for a toothpick." They had already been put to a thousand and one uses by ingenious American fighting men.

Wood shortages on all the fighting fronts have become proverbial. In North Africa wooded signposts had to be replaced by metal ones because they were stolen for fuel.

Millions of boxes go ashore with our fighting men

In Italy wood is so scarce that it is not even burned. Steel Bailey bridges, designed for combat, have been left standing because of the lack of timbers for replacement.




Ashore, the job of wood is never finished. Here former crates help servicemen get their feet out of the mud and their minds away from the war. Built by Army Ordnance, the "Palace Theatre" can seat four hundred

Even in such well forested countries as France the wood shortage is acute; and the present production goal of 200,000,000 board feet will probably not be met because of transportation difficulties. Moreover, the 110 sawmills set up in the Ardennes were wrecked by the December German offensive. For lack of dimensional timbers, construction units have been forced to use high-priority steel rafters.

Anticipating this situation, a program was initiated by the War Production Board along with the armed services and various government agencies that insists upon the salvaging of re-usable lumber and upon the economical design of wooden structures. Over 9,000 specialists have completed courses in this subject at the United States Forest Products Laboratory in Madison, Wisconsin. As a result, with the idea of facilitating re-use, the number of box sizes produced has been reduced from seven hundred to less than one hundred.

Standardized packing represents another method whereby wood can be saved. For example, nail-makers will now ship by the full keg rather than by the hundred-weight. Moreover, it has been found that by using the smallest sizes and widest spacing suitable in each case, barracks and other structures can be built with half as much lumber as would have been required if engineering plans had not been drawn with conservation in mind. One order alone from Army Ordnance eliminating center-matched lumber in favor of square edges saves more than 50,000,000 feet a year.

However, the greatest opportunity for reducing lumber consumption is presented by the shipment of military supplies. Without containers to pack them in, this production is almost useless; and for safety in transit and continued utility, the nailed wooden box is unrivalled. Its uses have trebled since 1940, and now absorb well over 13,000,000,000 board feet a year. The principal reason is that the armed services are packing in wood more than seventy-five percent of their export supplies. For the Quartermaster alone, this means 700,000 items. No wonder that half of all lumber produced sooner or later finds its way into a box. Moreover, this trend will increase as the need for small arms and ammunition becomes greater.

Therefore, a Container Coordinating Committee has been set up for the purpose of exchanging information on needs and supplies. A showroom has been established by Army Ordnance in the Pentagon Building in Washington to display obsolete boxes. Here quartermasters can get rid of what they do not need and find what they want. The waste would otherwise be enormous, for boxes must be re-designed continually to fit changing specifications.

This system works so well that little is left over for sale by the Treasury's Office of Surplus Property, where a final effort is made to channel it into essential activities.

Although the first object in designing containers is to meet Army specifications, engineers are giving more thought to their re-use; this means that if the specifications become obsolete, the box will not be wasted. Another objective is to produce a box or crate that can be used intact as long as possible before being knocked apart.

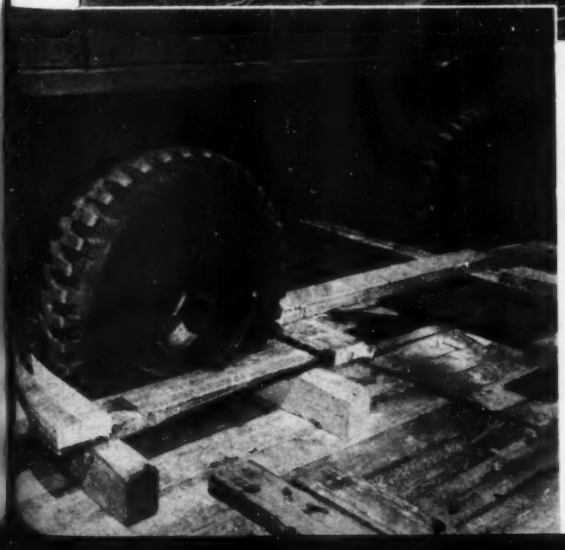
It is for this reason that airplane engine boxes are so designed that the new engine can be taken out and the old one packed in the same box. In fact, regulations prohibit the use of any other kind of box for this purpose. For the same reason maps are shipped in their own cases and tools in their own chests. Equipment for folding and repairing parachutes is packed in a crate that becomes the sixty-foot table necessary to fold them. An ingenious airplane crate

**Salvage officers of the Hampton Roads Port of Embarkation discuss the problems of lumber reclamation. In little more than a year, 18,000,000 feet of lumber have been re-used in this port**

was worked out that became a hut, and a jeep crate that became a trailer!

Once a shipment is received at an Army depot, it is the duty of the salvage officer (usually the quartermaster) to dispose of the scrap lumber and boxes without waste. Examples are legion. At one Ordnance Military Training Center whole dummy villages were built of old boxes for practice in street fighting. At the Atlanta Army Service Forces Depot a re-sawing plant cut the need for new boxes from 120,000 board feet a week to 60,000.

The Army Transportation Corps is doing an outstanding job of lumber reclamation at the Hampton Roads Port of Embarkation, Newport News, Virginia. A year ago the docks at this busy port were being glutted with odds and ends of wood in the course of unloading the thousands of freight cars arriving each month. No one thought of it as re-usable, vital war material. Instead it was burned or thrown away. At the same time, lumber for dunnage on shipboard was being desperately sought with less and less success.



**Ingenious GIs (top) have rigged up a washing machine from scrap lumber in a Bougainville jungle. (Center)—An operating tent in the South Pacific is equipped with packing boxes for tables. (At left)—Salvaged lumber holds this truck steady on its way overseas**

This port received one of the highest priorities in the country, and still it was so short of lumber that vital war materials being rushed to battlefronts had to stay ashore.

The situation became so serious that the commanding officer, Brigadier General John Kilpatrick, asked the port quartermaster for a plan to keep the docks clear and at the same time relieve the shortage of wood. Lt. Colonel Alcide Desrochers went to work with his executive officer, Major Jack Hoffenberg, and soon had a plan

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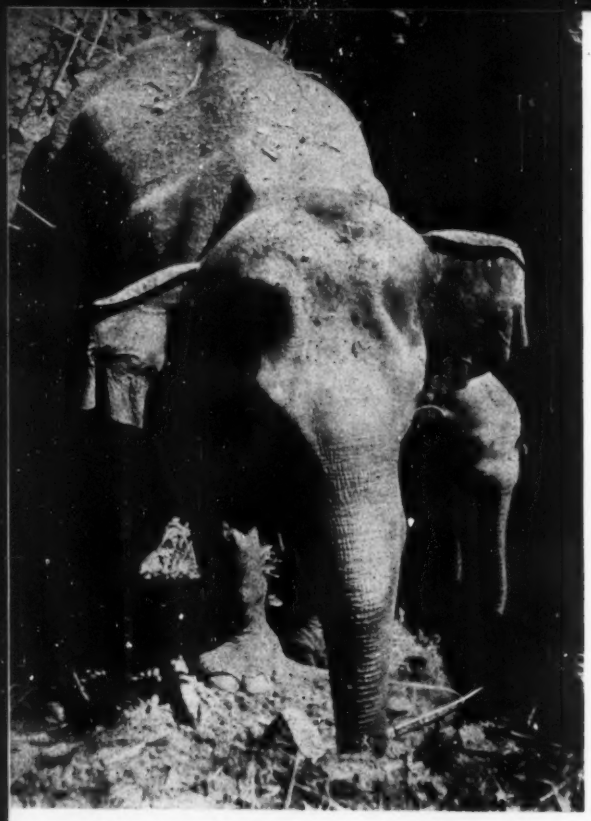

# ELEPHANT LOGGERS

## Rubber, Oil and Spare Parts are Not Problems to Plague the Logger in India — All He Needs Do is Capture, Tame and Train Wild Elephants, and Here's How It is Done

By C. CLAUDE WILSON

ALTHOUGH logging operations in most forests of the world are conducted today mainly for the execution of highly mechanized warfare, elephant power is still the rule in India. And it is producing lumber, heavy timber and piling at the rate of 1,000,000 tons a year—enough wood, if placed end to end, to build a track four feet wide and a half inch thick around the world.

To those who know India, the reasons for this primitive method of logging are obvious. Few roads exist in the forest jungles of that country, and even with these loggers will tell you that elephants require no gasoline, oil, or spare parts—that they live on green fodder which they collect themselves. Furthermore, native labor can manage elephants where it may not be adapted to machinery. And lastly, there are plenty of elephants in the jungle. The only problem is to capture, tame and train them.

For this, two methods are employed. The most practical and probably the most humane method is that used in the State of Madras in the extreme southern tip of India. (See AMERICAN FORESTS for March 1938.) This consists of digging pits and covering them with bamboo and litter along known elephant trails. The animals thus trapped are placed in a corral, and with good care are generally tame enough for training within three weeks.

The other and more dramatic method, employed in the State of Mysore, makes use of a *keddah*—a stockade covering several acres of forest and surrounded by a deep V-shaped trench. Some idea of how this method works may be had from the following account of an ele-

Blowing an ancient brass trumpet used for generations by the natives in *keddah* drives

Reduced to submission by under-feeding, wild elephants quickly strip the *keddah* trees

phant hunt arranged sometime ago by the Maharajah of Mysore in honor of the Viceroy of India.

Months before the arrival of the distinguished visitor and other guests, a fairly large herd of elephants had been rounded up in the teak and bamboo jungles and driven into the *keddah*—just in case the drive that was to take place in front of the Viceroy failed.

To round up and drive a herd of wild elephants exactly where you want it to go is no easy matter. Extending outwards from the gateway of the *keddah* a great funnel-shaped passageway several miles long is constructed; it is strong and high near the gate but elsewhere as inconspicuous as possible. At its mouth it is fully ten miles wide, and here the two arms of the passageway consist merely of brushwood and strong thorny creepers so arranged as to make it easier for the animals to move straight ahead than to try to break through. As they near the gate of the *keddah* the arms are stronger and higher until, for the last few hundred yards, they are almost impossible to breach.

A grazing herd is coaxed into the mouth of this funnel by an army of beaters, who often camp out in the forest for several weeks, living behind and to windward of the animals so as not to stampede them. During this phase no noise is made. The mere presence of the beaters will move the herd in the right direction. Eventually the space narrows, the elephants become uneasy at being confined and, as a rule, attempt to break out. It is then that the beaters, some on foot and others on *kumakis*, elephants especially trained for these capturing operations, crash forward shouting, beating drums, shaking rattles, firing blank cartridges and blowing ancient brass trumpets that have been used for the purpose for generations.

The herd, terrified, surges forward. Trumpeting, the animals try to escape on one side, then swing over to the other and find that blocked also. Finally, they are forced through the gateway and out into what appears to be open jungle again, only to find that it is in reality a trap, an area surrounded by an impassable trench. As soon as they are inside the *keddah* a massive drop gate is lowered and all retreat is cut off.

The area inside the *keddah* is generally covered with natural forest containing a high proportion of bamboo, a favorite food of the elephant; but this is fairly well stripped within a few weeks, after which the animals, probably numbering fifty, are fed on cut fodder, brought in at first in headloads and then in carloads, from an ever increasing distance.

To keep a whole herd of these huge animals adequately fed by such means is next to impossible. A full grown elephant needs more than a half ton of green fodder a day, and whether there is plenty or not he pursues his normal wasteful method of feeding. This consists in collecting a large and luscious mouthful of bamboo, grass, green leaves and

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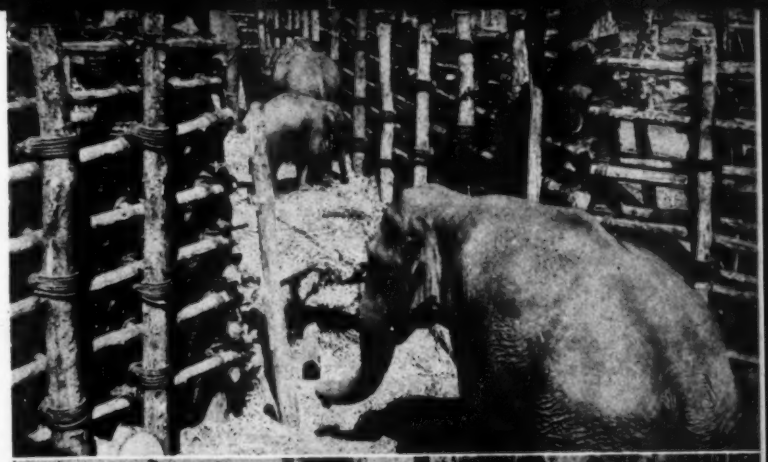

**The *keddah* "show"—(reading down) the elephants are enticed into the roping enclosure with sugar cane; "noosing" a particularly obstinate cow; escorting new captives to the river to bathe and—"prisoners" subdued and chained to great trees**

# CHELAN
# . . . Land of Beautiful Water

By P. T. HARRIS

LAKE CHELAN, deep in the Cascade Range in Washington, is one of the scenic gems of the nation—and among its largest inland bodies of fresh water.

A ribbon of blue deep-sunk in a green forested canyon, its width varies from a mile to two miles. But it is sixty miles long. This great length has made of it a thoroughfare for both business and recreation travel from the open valley of the Columbia River to the heart of the Cascade Mountains; from the sun-bathed grasslands and orchard districts at its foot to the shade of lofty peaks and green timber which shelter resorts, mines and other developments at its head. All of the lake except the orchard and farming districts is within the Chelan National Forest.

In spite of its size, Chelan is distinctly a mountain lake. Cold, deep blue water meets an abrupt shore line. Cliffs and bare ledges, some several hundred feet high, rise from the water's edge. Between them are steep, rough slopes. Small streams cut deeply into rock and tumble from snow-fed sources down to the lake. From its surface 1,100 feet above sea level, one can look up at barren peaks 8,000 feet high—and down into water 1,400 feet deep. The slopes on both sides are timbered. Stunted pines and firs occur even on the bare ledges where only crevices hold their roots.

The larger tributaries flow through narrow valleys of similar form. Gouged by ice-flows thousands of feet thick, their walls are precipitous, rising to lofty ridges and ragged peaks; their bottoms, lower slopes, benches and basins are heavily timbered.

The name "Chelan" is an Indian word, variously translated to mean "The

Cradled in the green forests of the Cascades, sixty-mile-long Lake Chelan is one of the nation's largest inland bodies of fresh water. Above, a mountain goat

Land of Beautiful, Bubbling, or Deep Water." All of these adjectives are appropriate, and are evidence of the redman's appreciation of this region. However, it is also known that the Indians regarded the lake as the home of evil spirits. Possibly this superstition was enhanced by the sudden, treacherous storms that dashed their canoes against the shores; or by the great depth of the water. Yet, regardless of seen and unseen dangers, they used these waters extensively. The lake was their route of travel for fishing and hunting expeditions, to the huckleberry patches, to the big cedar trees from which their canoes were made, and to trails crossing the Cascade Range. Still earlier it was navigated by a people of whom nothing was known except that they left pictorial messages painted with indelible red pigment upon cliffs along the shore. Having served as an artery of travel since prehistoric times, the lake still serves that purpose. Except by boat or by trail over high mountain passes, there is no access to its head.

**Chelan's back country is rough and rugged—a deeply cut system of mountain valleys, some heading against the snouts of living glaciers**

The boat trip is of special interest at any season. Leaving the towns and orchards at the lower end, one slips along towards a distant jumble of ragged peaks. On one side an abrupt grassy shore line rises first to benchlands covered with orchards and then to timbered upper slopes. On the other side the forested mountains come down to the water's edge or to narrow strips of cultivated land. After twenty miles, the lofty peaks close in upon the lake and continue to its head. Springtime sends streams cascading down rocky courses from the snow-clad ridges. Summer sunshine blends lights and shadows upon the crags. Autumn brings cloud-strata that ring the peaks, and snow on the higher slopes. During winter the big mule deer and mountain goats come down to the lake shore. As in all mountain country, each season has its charm. The long expanse of waterway adds another.

But the "Land of Beautiful Water" also includes a back-country. While this is one of the roughest sections of the Cascade Range, the hundred mile stretch offers much of interest. From Stehekin, a small farming and resort community at the head of Lake Chelan, the Stehekin River extends thirty to forty miles back in a deeply cut system of mountain valleys. Some head against the snouts of living graciers, others against sheer walls; and their intervening ridges are generally too high and steep to be readily climbed. But many lead to lush mountain meadows so characteristic of the Cascade Mountains, to open, grassy ridges and basins.

Thus, in the Lake Chelan country, the stockman finds his forage, the miner his ore, the mountaineer his peaks, the fisherman his cut-throat and rainbow

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# WARTIME SPRAYS FOR YOUR TREES

By OSCAR F. WARNER

THE many insects and diseases which attack shade trees do not seem to realize there is a war on. For in spite of manpower shortages and certain restrictions on the use of spray materials, these insects and diseases are on the increase.

In determining how to meet this situation, it is well to realize that many factors govern the occurrence and yearly abundance of shade tree pests. All insect life is affected by adverse climatic conditions, such as extremes in temperature, moisture and light. Birds, predacious and parasitic insects and disease are other important natural checks.

Leaf, twig and fruit disease fungi pass the winter on the twigs, or in the old foliage or fruit on the ground. Reinfection and spread of these diseases are from the myriads of minute spores which are formed during the following spring and summer. Wet and humid weather lead to the rapid formation and spread of these spores; while dry and cool weather retard and keep their development to a minimum.

Spraying by man, however, is by far the best method to control the insects and diseases of shade trees. Tree owners can apply control measures to their shrubs and small trees by hand portable spray equipment, but the large trees must be entrusted to a qualified arborist or tree expert.

Expensive and powerful spray equipment, capable of delivering thirty to fifty gallons a minute at 500 to 700 pounds pressure, is necessary to force a fine, mist-like spray to the top of a tall tree. It is well, however, for tree owners to understand something of insect and disease control, together with the mechanics of spraying, so that they can judge the ability of the arborist they employ and the resulting control measures.

Insects on shade trees are controlled by applying an insecticide to the foliage, fruit, or bark. There are two classes of insecticides: stomach poisons and contact sprays. Stomach poisons are used for insects, with chewing mouth parts, which bite portions from the leaf. The various leaf-eating caterpillars, canker-worms, sawflies, slugs and beetles are controlled with stomach poisons.

Despite much search for a better poison for use against chewing insects, arsenate of lead has consistently maintained its leadership and is the material universally used on shade trees. The rate of application is from three to six pounds to 100 gallons of water, depending upon the insect to be controlled. The effectiveness of lead arsenate is greatly increased by the addition of a sticker. Lead arsenate may be combined safely with bordeaux mixture, sulphur, nicotine sulphate and summer oils. Soap and lead arsenate should never be combined, because this combination liberates arsenic which may cause burning of the leaf tissue.

The many insects which feed on shade trees by directly sucking the plant juices must be controlled by contact insecticides. Contact spraying is literally what the name infers—the insect must be actually hit with the spray and control results from suffocation or paralysis of the nervous system. Nicotine sulphate, petroleum oils and lime sulphur to a limited extent, are the contact insecticides most widely used on shade trees.

Nicotine sulphate is the standard and most widely used contact spray for trees, shrubs and plants in leaf. Many species of aphids, leaf hoppers, leaf miners, galls and the crawling young of various kinds of scale insects are efficiently controlled by nicotine sprays. The dosage customarily employed is one pint to 100 gallons of water.

Nicotine sulphate will be available this year but in more limited quantities as the demand for it will be increased by restrictions and shortages of rotenone and pyrethrum, its nearest competitors.

One of the best ways to conserve nicotine is by the addition of wetting and spreading agents. So much progress has been made in recent years in search for activators, that it is now unnecessary to use more than one half as much nicotine as formerly recommended. For many of the very soft bodied insects, one pint of nicotine sulphate to 200 gallons of water, combined with a good wetting and spreading agent, should give satisfactory control. Soap has been used as a wetting agent with nicotine sulphate for many years. However, it should be used with nicotine alone, and must not be combined with sulphur in any form, or lead arsenate. The newer sulfated alcohols are more efficient spreading and wetting agents and can be safely combined with the nicotine in combination with lead arsenate and sulphur.

The materials most generally used for dormant or delayed dormant contact sprays are oils that will mix with water or lime sulphur. The dormant condition of trees permits stronger insecticides to be used, and dormant sprays are the only means of controlling the adult scale insects. Other common insects controllable at this period are aphids, plant lice and spider mites. Dormant applications are also excellent clean-up sprays for many leaf feeding insects which over-winter on the bark. Dormant spray oils also have the properties to kill the over-wintering eggs of such insects as leaf rollers, cankerworms and tent caterpillars.

In general, dormant spray materials may be divided into three broad types: the miscible oils, oil emulsions and lime sulphur mixtures. The miscible oils are more stable than oil emulsions since the oil particles are smaller and do not separate as readily from the water in which they are suspended as do the oil emulsions, which are cheaper but more likely to cause serious injury to plants. The latter are applied principally to fruit trees but are sometimes used by ignorant operators for spraying ornamentals as a substitute for the more expensive miscible oils.

Lime sulphur is less effective than oil, more irritating to the operator, and severely stains painted structures. On shade trees miscible oil has largely replaced lime sulphur as a dormant spray, but it is still used on those species which are susceptible to oil injury. Lime sulphur still has extensive usage as a summer spray but chiefly as a fungicide, and not as an insecticide.

For most dormant spraying, miscible oils are diluted one part to fifteen parts of water, but on trees in a weakened condition or evergreens with a bluish cast, the miscible oil may be diluted one part to thirty parts of water. Oil sprays should never be used in freezing weather or when there is a probability of the temperature dropping below forty degrees Fahrenheit within twenty-four hours after spraying. Freezing before the spray has thoroughly dried may result in severe injury to the bark and tender twigs. Oil sprays should never be used on sugar maple, Japanese maple, walnut, butternut, beech, linden, magnolia, or the upright type of junipers.

One of the first principles that must be learned regarding leaf, twig and fruit disease control is that the sprays must be applied before the principal infection period. Once the fungus, through its

spores, gets inside the tissue of the host, no treatment will kill the disease without killing the tissues of the plant. A fungicide will kill and prevent the propagation of external spores and so limit the spread. Therefore, all control of leaf, twig and fruit diseases is preventive spraying.

The most important fungicides contain either copper or sulphur as the fungicidal agent. Sulphur is available in the form of lime-sulphur and wettable sulphurs. Lime-sulphur is an effective fungicide but is very caustic and apt to cause foliage burn.

Wettable sulphurs are not quite as effective fungicidally as lime-sulphur but they are much safer to use and have largely replaced lime-sulphur as a foliage spray of shade trees. Wettable sulphurs should be used according to manufacturers' directions, which are from six to ten pounds to 100 gallons of water. Lime-sulphur should never be used in combination with miscible oils and no form of sulphur should be combined with soap.

It is the writer's opinion, based on much actual experience, that copper, in the form of Bordeaux mixture or the fixed coppers, gives the best control of the leaf diseases of shade trees. Bordeaux mixture is made by combining six pounds of copper sulphate and six pounds of hydrated lime with 100 gallons of water. The fixed coppers should be used according to manufacturers' recommendations which is usually from two to three pounds to 100 gallons.

There is a serious shortage of copper at the present time because the metal is extensively used in the war industries. It is very possible that sulphur must supplement Bordeaux this year for disease control of shade trees.

The various leaf anthracnoses, spots, rusts and scabs can be controlled by proper spraying with a fungicide. Successful control depends upon preventive spraying. Three sprays are usually necessary to cover the primary spore infection period and leaf development.

The needs of war have developed several new insecticides and fungicides which are of interest to shade tree owners. DDT, the new insecticide, is perhaps the most spectacular. It has received much publicity as a fly, mosquito and louse killer for the armed forces. Preliminary tests with DDT by the federal Bureau of Entomology and Plant Quarantine on gypsy and codling moth control show remarkable results. Elm twigs have been protected against crotch feeding of the European bark beetle, which spreads the Dutch elm disease, for a period of 127 days after spraying. As a soil insecticide DDT is 100 times as toxic to Japanese beetle larvae as is lead arsenate, ten pounds an acre being the equivalent to 1,000 pounds of arsenical.

**Contact sprays are effective only if the entire tree is thoroughly soaked. For large trees, high pressure equipment is necessary**

Before DDT is available and safe for general use much more experimental work must be done to determine whether it can be used on all plants, or is harmful to animals, birds and beneficial insects.

The organic sulphurs hold great promise as the future universal fungicide. So far, three, under the trade names of Fermate, Methasan and Dithane, have been tested in the agricultural field. They are very effective on all diseases of fruit trees, vegetable anthracnoses and potato diseases. When available for shade tree spraying, they undoubtedly will be more effective than copper or sulphur on certain diseases.

With the exceptions to the restrictions of the use of rotenone and pyrethrum on ornamental plants, the unavailability of DDT and organic sulphurs, and the temporary shortage of nicotine and Bordeaux, sufficient spray materials are available to meet all shade tree requirements.

Transportation facilities to the supplier are very slow and uncertain. This

(*Turn to page* 250)

# WEEPING SPRUCE

*Picea breweriana*, Watson

By G. H. COLLINGWOOD

WEEPING SPRUCE is limited to the Pacific Slope where it is generally restricted to the Siskiyou and Shasta mountain regions of California and adjacent areas in southwestern Oregon.

On steep north slopes of mountains and ridges it may extend up to a timberline at elevations of 5,000 to 7,000 feet above sea level. It may also grow about protected heads of mountain streams, to form open, parklike stands or more often at lower elevations it may associate with mountain hemlock, Douglasfir, white fir, and sugar pine. Always its long drooping side branches fringed with plummet-like branchlets and its slender pointed top set it apart from its neighbors.

Sterile specimens of what are thought to be weeping spruce were collected in 1863 near the base of Mount Shasta, by the California botanist, Professor William H. Brewer. Hence the fact that it is frequently known as Brewer's spruce. However, definite identification was not achieved until 1884 when Thomas J. Howell of Arthur, Oregon, found individual trees on the north side of the Siskiyou Mountains near the headwaters of the Illinois River, in northern California and even then, the actual naming and botanical description awaited Sereno Watson in 1885.

Of some forty species of spruce, seven are native to the United States. All frequent the cooler regions of the northern hemisphere. They seem to spill over from within the Arctic Circle south to Arizona and the Carolinas in North America, to the Pyrenees Mountains in Europe, to the Himalaya Mountains and central China, in Asia, and over onto the island of Formosa. They generally prefer moist, well-drained soils. Their pyramidal form, dense glossy foliage, pointed individual needles and pendant cones distinguish them from the firs whose cones are erect, and from the pines whose needle-like leaves are usually in clusters and always lack the tiny leaf pedestal. After spruce needles fall, the pedestals remain on the twig, making it rough to the touch.

*Picea* is the classical name for spruce. It comes from the Latin *pix* meaning pitch, which refers to the resinous exudations from the bark. The pitch is a source of spruce gum and spruce beer. More significantly, it is the base from which some varnishes and medicinal compounds are derived. The name *spruce* may have derived from Prussia, where spruce is one of several native forest trees.

Weeping spruce, in company with Sitka spruce, differs from the five other American spruces in that the cross section of the leaves are flattened or obscurely triangular rather than four-sided. Each needle is three-quarters to one and one-eighth inch long, somewhat flexible, and blunt ended. The rounded under surface is slightly ridged, dark green and shiny in contrast to the flattened upper surface on which four or five rows of stomata parallel either side of the midrib. They grow from all sides of the twigs, to give a bushy or spray effect. Flat leaved spruces are a separate group known as *Omorica*, in distinction to the four-sided *Eupiceas*.

A unique feature of weeping spruce is the multitude of fine, string-like branchlets which hang like a four to eight foot fringe from all but the topmost limbs. Sitka spruce may show this string-like feature, but less extensively.

A long, pointed crown and heavily drooping branches carrying many slender, slightly hairy, pendulous branchlets, with

The long, drooping side branches and slender, pointed top are characteristic of mature Weeping Spruce, eighty to one hundred feet high

dense foliage that is a bright but deep, yellow-green are added features of this singular tree.

Dark purplish-green cones, two to four inches long, hang from the slender twigs. The cone scales are broadly rounded and have smooth edges in contrast to the thin elongated and toothed cone scales of Sitka spruce. Like other spruces, they mature in one year. After the dark chocolate brown, winged seeds are shed late in September and October, the cones turn dull brown. The seeds are about an eighth of an inch long, with relatively short wings. Many stick in the cone until the end of the second autumn.

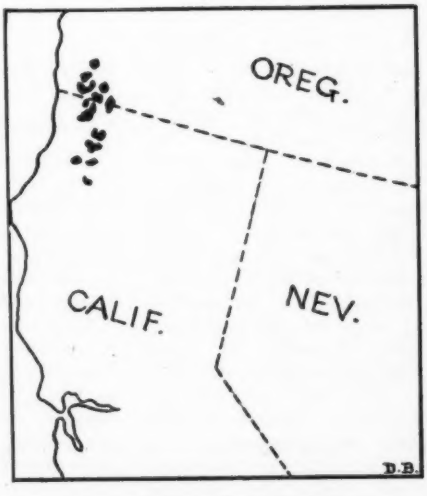
The trunk swells at base, tapers rapidly to the top, and the dull red-brown mature bark is about three-quarters of an inch thick and consists of layers of long, thin, firmly pressed sheets or scales.

The wood is not only scarce, but usually inaccessible and has small commercial importance. Little is known of its qualities. It is soft, light brown or nearly white, fine-grained and rather heavy. The sapwood is indistinct. The branching habit results in many knots.

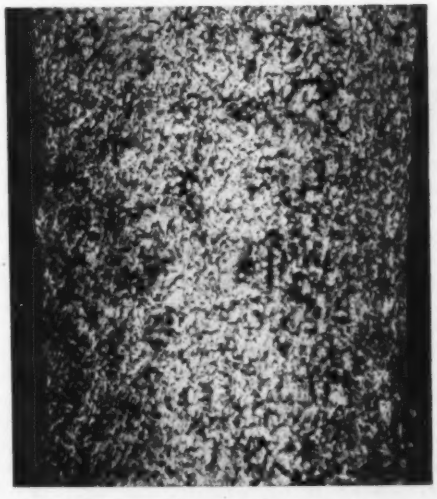
Mature trees may reach eighty to one hundred feet high, with diameters of eighteen to thirty-six inches. A tree growing near Miller Lake in southwestern Oregon has been reported with a breast-high circumference of twelve feet and two inches — comparable to forty-three inches in diameter.

Attempts to plant weeping spruce for ornamental purposes have been consistently disappointing. Accordingly, the tree remains the rarest and least known American spruce.

A unique feature of Weeping Spruce is the multitude of fine, string-like branchlets which hang like fringe around the dark purple-green cones




Natural range of Weeping Spruce



Bark is red-brown, with thin scales

# Around the States . . .

### Potomac Dam Project Abandoned

FOLLOWING hearings in Washington on April 3, the Army Corps of Engineers announced that plans for a system of fourteen dams on the Potomac River and its tributaries would be abandoned. This project, the objectives of which were flood control, hydroelectric power, pollution abatement and recreation, had developed widespread opposition.

Opponents brought out at the hearings that the project was primarily for the development of power in a region already well supplied with cheap electricity; that the spending of $235,000,000 of federal funds could not be justified by the prospect of future industrial development in the Potomac Valley; and that more than 176,000 acres suited primarily to agriculture would be flooded. It was further claimed that the project as presented would not provide for adequate flood control and recreation needs.

The opposition came from various sources. Landowners pointed to the disruption of communities and the loss of farm land; conservationists pointed out that an area of unique historic, scenic and recreational value would be lost; spokesmen for railways in the region affected emphasized damage resulting from the project to mining and freighting industries.

Proponents of the proposal, which was made under the authority of the Flood Control Act of 1936, built their case primarily on the need for industrial development in the Potomac Valley.

### Marckworth Named Dean

Professor Gordon D. Marckworth has been named dean of the College of Forestry of the University of Washington, succeeding Dean Hugo Winkenwerder.

The new dean has been professor of forest management at the University since 1939. Prior to that, he was dean of the School of Forestry at the University of Georgia and professor and head of the Department of Forestry at Louisiana State University. A graduate of the Yale Forest School, Dean Marckworth served two years with the Forestry Corps in France during World War I.

Mr. Winkenwerder was appointed dean of the College of Forestry in 1912, and in the succeeding years directed its development to one of the foremost forestry schools in the country. He will remain on the forestry faculty as dean emeritus and professor of forestry.

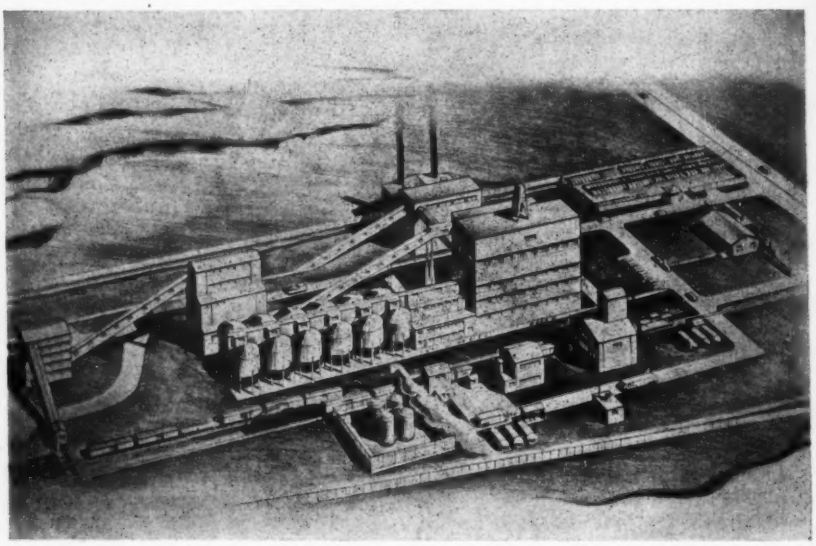
In 1921, Dean Winkenwerder founded the Washington State Forestry Conference and for a while served as its chairman. He was also a leader in the establishment of the 266-acre University of Washington arboretum, and is at the present time chairman of the University Arboretum Committee. A native of Wisconsin, Dean Winkenwerder received his Master's Degree from Yale in 1907.

### New Forest Marketing Cooperative

Timber owners in Connecticut, on April 5, completed the organization of Connwood, Incorporated, a cooperative marketing association for forest products. Ralph C. Hawley of the Yale School of Forestry, who has been in charge of the woodlands of the New Haven Water Company, was elected president. The secretary-treasurer is Edgar L. Heermance of the Connecticut Forest and Park Association.

The object of the new corporation is "to aid the practice of forestry among owners of timberland in Connecticut and adjacent areas by the marketing, harvesting and processing of forest products." The membership consists of two classes, which may be identical. Anyone selling forest products through the corporation will automatically become a participating member and share pro rata in any profits after building up the reserve required by statute and paying dividends on the stock, which are limited to six percent. Voting members will be those who have subscribed for stock. The authorized capitalization is $50,000.

Connwood will give timber owners of the state better bargaining power, and a more diversified market. By controlling a number of large contracts, it should be able to exercise control over cutting practice. It is felt that this will be more effective than any form of government regulation. One of the principal aims is to supply profitable outlets for material from thinnings, so as to build up the woodlands of the state for continuous yield, and thus utilize the new markets for wood to improve the forests instead of wrecking them.



**America's first plant for the commercial production of alcohol from sawdust will be in operation this summer. It is located in Oregon**

### Alcohol From Sawdust in July

Construction of one of the world's largest, and America's first, commercial plant for the production of ethyl alcohol from sawdust and waste wood by the Scholler-Tornesch method, has reached a point where it is expected that it will be in operation by July 1.

The $2,250,000 project occupies a fourteen-acre site at Springfield, Oregon. It is the property of the Willamette Valley Wood Chemical Company of Eugene, Oregon, which was formed by local lumbermen, themselves producers of large quantities of sawdust, the essential raw material. Financing was arranged through the Defense Plant Corporation.

An initial, daily consumption of 200

An International TD-18 Diesel crawler moves in to doze the tangle in a Washington forest on a railroad construction job. With dozer and winch this unit makes short work of clearing brush, trees and fallen logs.

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tons of sawdust with a corresponding output of 10,000 to 12,500 gallons of ethyl alcohol is planned, according to Charles Snellstrom, president of the company. The plant is designed to increase that output greatly and ample supplies of raw material are available to permit rapid expansion.

Construction engineers report that the railroad facilities are all in, most of the piling has been driven, foundations laid, main buildings erected, and underground pipe work installed. A 6,800-foot sewer will carry away industrial waste.

Shop details on the specialized percolation, fermenting, and distilling equipment have been completed, but some delays caused by shortages of critical materials have been experienced.

The laboratory of the Oregon State College at Corvallis, under Dean Paul M. Dunn, is co-operating in a study of the qualities, deterioration under storage, and availability of wood waste.

Meanwhile, ethyl alcohol produced from waste sulphite liquor began flowing, on March 5, into huge storage tanks at the Puget Sound Pulp and Timber Company plant, Bellingham, Washington. This is the first large scale production of alcohol from waste sulphite liquor in the United States. The daily capacity of the plant, which utilizes about 600,000 gallons of pulp waste, is approximately 5,500 gallons of ethyl alcohol plus smaller quantities of methanol alcohol and fusel oil.

# PHILIP L. BUTTRICK—FORESTER

**By JOHN B. WOODS**

ALTHOUGH his name was known to me, the fact is that I had never met Phil Buttrick until late December 1943, when I came to Washington to start on the Forest Resource Appraisal for The American Forestry Association. Naturally, I was on the lookout for men with experience in the kind of work we had to do, well acquainted with one or another region of these far spreading United States. So, since he was deeply interested in our project, it was not surprising that P. L. B. should have been the first recruit to our regional consultant staff.

From time to time during fifteen months of close and pleasant collaboration, Phil told me something of his life. Born in New Haven, Connecticut, June 25, 1886, he grew up beside Long Island Sound and enjoyed to the full the outdoor existence of an American amphibious small boy of half a century ago. Interested in staying out-of-doors, he headed for Yale and "Sheff," but eventually came out at the forestry gate with the other M. F.'s of the class of 1911.

Like most fledgling foresters of that period, he put in a spell with the United States Forest Service. State forestry also attracted him briefly, in Connecticut and North Carolina, and he worked, at one time or another, for several lumber and pulp companies. Then the first World War challenged and he volunteered to drive an ambulance in France. Before long, the American Red Cross was making use of his engineering know-how over there, but when America finally entered the struggle, he schemed to get into combat service, and succeeded as a second lieutenant of field artillery in the French Army. Somehow I gathered the impression that those war years were among Phil's best, both of themselves and because they introduced him to Europe and particularly to the French.

After the war, he taught a while at Michigan State College. Then, from 1923 to 1929, served as secretary and forester of the potent Connecticut Forest and Park Association. Then came another of the golden periods, service in Italy, France, Spain, Portugal and northern Africa, as forester for the Armstrong Cork Company. There was an additional reason why these years were so good. In 1922 he had married Miss Helen Goodrich, home economist, who accompanied him on his travels.

**Philip L. Buttrick**

Philip L. Buttrick, regional consultant for the northeastern states of the Forest Resource Appraisal of The American Forestry Association, died at Dover, Delaware, April 5, 1945. He was seized with a fatal heart attack in the office of State Forester W. S. Taber.

Back in this country, Phil helped out with the CCC in his native state. Characteristically he derived real satisfaction in recalling that his camp was recognized as one where malingering was at a minimum and the boys "turned out the work." Thereafter he spent several years with the Land Conservation Unit of the Resettlement Administration in New England and in the middle states.

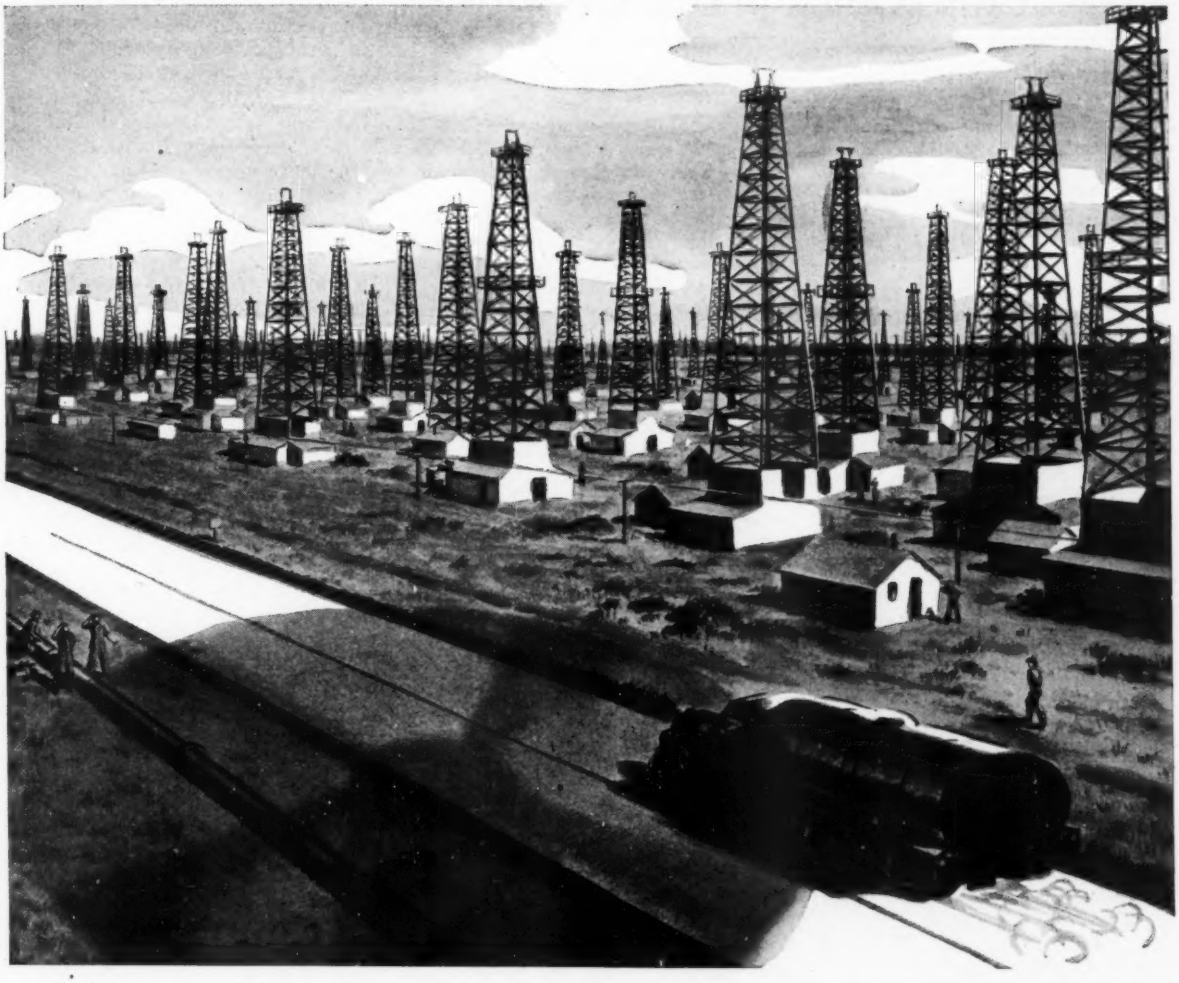
He loved teaching and so it was not strange that in 1937 he went to the School of Forestry at the University of Georgia as professor of forest management. His lectures on forest economics attracted so much favorable attention that they naturally grew into a textbook, *Forest Economics and Finance*, which is regarded as the best in its field.

From 1940 to the end of 1943, Phil did consulting work of various kinds, including field forestry and research. I pried him loose from the editorial staff of AMERICAN FORESTS by setting forth the importance and difficulties of gathering together the forestry facts about all the states lying north and east of the Potomac River. His fertile imagination and enthusiasm for trying new methods contributed much to the organization and development of the Forest Resource Appraisal in its broader aspects. Needless to say, he worked hard and to good effect in his own region.

Impatient with a not very rugged body, Phil was always pushing himself, substituting qualities of spirit and intellect for physical strength to get a job done. Much of the time he drove ahead on will power and enthusiasm. Such punishment probably shortened his life, yet gave it added meaning.

Most New Englanders display certain traits which mark them as products of an environment and a tradition. Brusqueness, impatience with beating about the bush, regard for the worth of a dollar, these were with Phil the outer protective shell of a steadfast personality, modest to the point of shyness yet on occasion droll, considerate and extraordinarily generous. We shall miss him more than we can say.

★ NUMBER 13 IN A SERIES OF MESSAGES BY KELLETT AIRCRAFT CORPORATION ★



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# CONSERVATION IN CONGRESS

THE House Committee on Appropriations late in March reported out the bill, H.R. 2689, making appropriations for the Department of Agriculture for the fiscal year beginning July 1, 1945. While the bill as presented to the House for action reduces by more than $140,000,000 the over-all budget for the Department as recommended by the Bureau of the Budget, the committee approved some substantial increases for forest activities during the coming fiscal year.

The authorization for the protection and management of the national forests is increased by $574,814 over the amount Congress made available for the current fiscal year. Of this increase $331,286 is provided to handle the increased timber business of the national forests; $81,520 is for the maintenance of national forest improvements other than roads and trails; $118,764 for intensification of range management; and $43,243 for more adequate enforcement of measures to safeguard the health and safety of national forest users.

The item for cooperation with states and private owners in protecting forests from fire is increased by $1,000,000, bringing the total authorization for that activity up to $7,300,000. No increase was granted for the Forest Products Laboratory in Madison, Wisconsin, or for farm forestry cooperation. The total amount authorized for the Forest Service, not including its work in white pine blister rust and construction of forest roads and trails, totals $27,075,480, as against $25,465,340 for the current year.

The amount approved by the committee for forest roads and trails during the coming fiscal year amounts to $5,918,778, which represents an increase over the current authorization of $1,757,282. An expenditure of $4,214,222 in new highway forest construction which had been recommended by the Bureau of the Budget was disapproved by the committee.

The Budget Bureau's recommendation of funds to be expended for white pine blister rust control next year was also cut by the committee from $4,250,000 to $2,923,867. This latter amount, however, represents an increase of $1,000,000 above the current appropriation. These funds are allocated for expenditure as follows: Bureau of Entomology and Plant Quarantine $1,397,963, Forest Service $1,266,066, Department of the Interior $259,838.

The committee recognized the need of expanding studies looking to the control of diseases of the elm by increasing the Bureau of Plant Industry's funds for this work by $20,000, to a total of $46,570. These studies are in the interest of controlling the Dutch elm and the phloem necrosis diseases, both of which are seriously threatening the elm trees in several sections of the country. Studies of insects carrying these diseases are also being made by the Bureau of Entomology and Plant Quarantine for which the bill provides approximately $25,000, or the same as for the current year.

The committee also increased the Budget Bureau's estimate for spruce budworm investigations by $10,000, making the total item for this activity $62,100. In its report, the committee emphasized that the increase is granted for the purpose of enlarging experiments in the application of sprays, "especially DDT by airplane to determine the effect upon the spruce budworm, its effect upon other insects and upon the trees and upon wildlife."

In respect to the grazing of livestock on the national forests and the grazing fees now prevailing, the committee in its transmittal report made a significant comment. It said: "The committee from evidence presented was impressed with the need for revising grazing fees upward in view of the increased value to stock grazers of the grazing privilege. Such an upward revision would be more in keeping with the present price levels of livestock and livestock products."

The committee also interjected a comment on the many requests it had received, particularly from the southeastern states, urging the appropriation of funds for the creation of experimental forest areas throughout the country to determine and demonstrate forest practimes that would promote longtime conservation of forest resources. The committee stated it "is impressed with the need for work of this kind but believes such a vast enterprise should not be initiated until a very carefully studied program has been worked out—one which will provide for state and private contributions commensurate with the local benefits. The committee suggests that the Department give careful study to this matter with a view to the formulation of a definite program for consideration next year."

For the work of the Soil Conservation Service next fiscal year the bill provides funds totaling $29,754,300, an increase of $4,261,500. The increase, the committee states, is to provide operating funds for the increasing number of soil conservation districts which are being organized in different sections of the country.

# CONSERVATION CALENDAR

**Important Bills in Congress With Action**
**March 13 - April 16, 1945**

### Bills Enacted

H. R. 2126—Appropriations for Civil Functions of the War Department. Contains provisions for flood control. Introduced February 12. Passed House February 13. To President for signature, March 26.

### Appropriations

H. R. 2374—CANNON—First Deficiency 1945. Making appropriations to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1945, and for prior fiscal years, to provide supplemental appropriations for the fiscal years ending June 30, 1945 and June 30, 1946. Passed House March 2. Reported in the Senate and referred to the Senate Committee on Appropriations. Reported by the SCA with amendments (Report No. 141).

H. J. Res. 141—CANNON—Joint resolution making supplemental appropriations for the fiscal year ending June 30, 1945, in lieu of certain appropriations contained in H. R. 2374—79th Congress, etc. Reported by the House Committee on Appropriations, March 26. (Report No. 384).

H. R. 2689—TARVER—Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1946 (Report No. 347). Passed by the House March 26. Referred to the Senate Committee on Appropriations, March 26.

H. R. 1984—Independent Office Appropriation—1946. Includes $35,000,000 immediately available and to remain available for duration of construction, maintenance, and improvement of access roads. Passed House February 8.

### National Monuments

H. R. 2691—BARRETT—To provide for the administration of all public lands in the Jackson Hole National Monument by the Forest Service of the United States Department of Agriculture. Introduced March 20, and referred to the Committe on the Public Lands.

### Water and Stream Control

S. 555, H. R. 2203—MURRAY—To establish a Missouri Valley Authority to

(*Turn to page* 242)

# More Loads per Day!

## MORE OPERATING DAYS PER MONTH!

Servo-type self energizing brakes.
Outside clutches and brakes for accessibility. Self-ventilated for cooler operation.
Cable load is taken directly from drum to housing thru tapered roller bearings.
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Sturdy steel housing prevents excessive distortion of parts. Provides lubrication chamber for entire unit.

GAR WOOD ROAD MACHINERY

# GAR WOOD Cable CONTROL UNITS

Gar Wood Cable Control Units are engineered and constructed to give unsurpassed performance, under the toughest conditions, with a minimum of "down time" for adjustments. Special emphasis is placed on sturdiness to avoid excessive distortion of case and parts. Every minute detail of this smooth-running unit has plenty of trial and proof back of it. Remember that Gar Wood is the world's largest manufacturer of winches, with years and years of experience. You'll get MORE out of your machines (regardless of make) with a Gar Wood Cable Control Unit. That's not only our claim . . . ask any user.

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GW ROAD MACHINERY is Sold Through ALLIS-CHALMERS Dealers Everywhere

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TO LOWER CUTTING COSTS

FAMOUS "SILVER STEEL"
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SPECIAL GRINDING
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ATKINS
"Silver Steel"
BAND SAWS

Every Atkins "Silver Steel" Band Saw is made with one purpose in mind...to give you faster and smoother cutting and to stay on the job longer, with less tendency toward breakage and fewer stoppages for filing. To produce such saws, Atkins combines the best materials, the most skilled workmen, and these *five important manufacturing steps*: *"Silver Steel"* one of the finest saw steels ever used in band saws... Atkins' exclusive *tempering* process which imparts an exactly uniform temper throughout the entire blade ... scientifically controlled *heat treatment* ... *special grinding* to assure uniform gauge over the entire width of the blade ... skilled *tensioning* and leveling. These five steps are five important reasons why Atkins Mill Bands enjoy such continued wide popularity.

ATKINS

E. C. ATKINS AND COMPANY
413 S. Illinois St., Indianapolis 9, Indiana
*Agents or Dealers in all Principal Cities the World Over*

## Conservation Calendar

(*From page* 240)

provide for unified water control and resource development on the Missouri River and surrounding region in the interest of the control and prevention of floods, the promotion of navigation and reclamation of the public lands, the promotion of family-type farming, the development of the recreational possibilities and the promotion of the general welfare of the area, the strengthening of the national defense, and for other purposes. Introduced February 15, and referred to the Committee on Commerce. Public hearings April 16-19.

## Salvaging War Wood

(*From page* 227)

under way that is saving the government over $1000 a day. During the first year of operation, from March 1944 through February 1945, 17,500,000 board feet of essential lumber were salvaged and re-used. Curiously enough, this second-hand material is often preferred because it is better seasoned than the new stock.

The scheme works so efficiently that scarcely a piece of wood is lost. On every pier stands a gondola freight car into which is thrown all the scrap lumber taken from the cars bringing in supplies for shipment overseas. Each gondola holds approximately 9,000 board feet; and when full, is switched to the Morrison Area a few miles away. Here a half-mile track was laid at a cost of $40,000—an investment which has paid for itself many times over.

On the siding the gondolas are unloaded and the wood sorted. The twenty-five percent not worth processing is thrown to one side. Chocks and reusable containers are returned to a depot. The reclaimable lumber is cleaned of nails, sorted by size and piled. This work is done by prisoners of war. Shipping activities have first priority; but nearly every branch of service in the installation sends its trucks to the Morrison Area armed with requisition papers.

Captain William Eames, in charge of the area, met the writer and accompanied him to where some war prisoners, stripped to the waist, were piling lumber in the bright March sunlight.

"They are good workers," he declared, "and give little trouble. In fact, they are so efficient that each one can handle over 500 board feet a day. This saves the government $30. As we sometimes receive nearly 300 cars a month, we are kept busy.

"What is not used here is sent to nearby Fort Eustis, where it is re-sorted once more. What is left over, is burned. This alone saves 500 tons of coal a month. The net saving on the 2100 carloads received here last year, was over $1,000,000."

Following the example of Hampton Roads, each port of embarkation maintains such a stockpile for common use by all of its services. The Air Technical Service Command, which equips and maintains the Air Force, also has a uniform reclamation system at all depots to conserve critical lumber and plywood. It works about as follows:

At the Receiving Unit the boxes are opened and the nails are pulled with great care. Old markings are obliterated and the lid replaced with the clean side up. If more than minor repairs are needed, the boxes are sent to the central box reclamation shop where they are cleated, strengthened and made in all respects equal to newly constructed ones. The salvage officer makes arrangements for the reclamation of miscellaneous stock for any possible re-use.

With this simple program the Army Air Force reclaims approximately 83,000 board feet of lumber and 25,000 boxes every day.

For many years the salvage and reuse of lumber has been a policy of the Navy. Early in 1944 the program was intensified with the object of giving as much lumber as possible to overseas operations. Steps were taken to organize efficient salvage at all navy yards, repair bases and dry docks, as well as at air stations, operating bases and supply depots. Ammunition depots are especially important because large quantities of lumber are used for shipment here. Under proper supervision, much of this can be re-used for the same purpose.

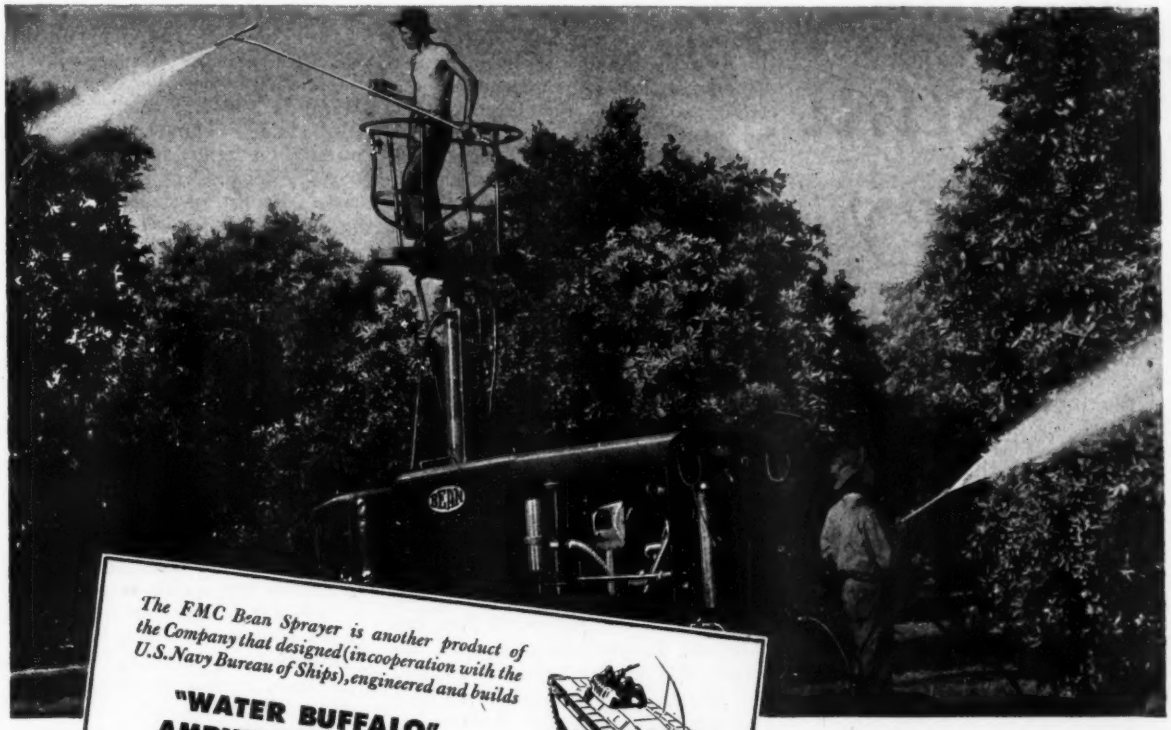
One example of an efficiently operated lumber salvage yard is at Mare Island, California. In 1944 a detail averaging seventy-five naval prisoners was used for sorting, cutting, and stocking the lumber. This arrangement has worked well; and as much as 800,000 board feet are handled each month.

The output of naval activities engaged in salvaging lumber is increasing, and with the addition of new installations the yearly total may reach 100,000,000 board feet. Compared with Navy consumption, this figure does not amount to over five percent of the total—but a large part goes into construction, which is not subject to salvage. Another large portion is used for overseas shipments,

# BEAN *Orchard & Crop* SPRAYERS

*Protecting tomorrow's harvests from destruction*

Here is an actual battle scene in the never-ending war against an enemy more merciless, insatiable and destructive than the Nazi or Jap! The enemy? *Insects and fungus diseases,* constantly attacking food crops all over the nation. Vital fighting equipment in helping to keep these pests under control are Bean Sprayers, embodying the famed Bean High Pressure Pump. Over 60 years' experience in building pest control equipment has been an important factor in establishing Food Machinery Corporation's enviable reputation for designing, engineering and manufacturing resourcefulness.



*The FMC Bean Sprayer is another product of the Company that designed (in cooperation with the U.S. Navy Bureau of Ships), engineered and builds*

**"WATER BUFFALO" AMPHIBIOUS TANKS**

used extensively by the Armed Forces.

Back of every FMC product is the extensive research, creative engineering and manufacturing skill of Food Machinery Corporation.

7 of Food Machinery Corporation's 14 major factories are making "Water Buffalos" or sub-assemblies.

*Other FMC Divisions and Typical Products*

**JOHN BEAN MFG. CO. DIV. AND BEAN-CUTLER DIV....** also make FMC Fog Fire Fighters. Lansing, Mich. and San Jose, California.

**PEERLESS PUMP DIVISION.** Turbine, Hi-Lift and Hydro-Foil Pumps. San Jose, Los Angeles and Fresno, California; Canton, Ohio.

**RIVERSIDE DIVISION.** Produce Packing Equipment and Protective Processes, Automatic Box Making Machines. Riverside, Cal.

**FLORIDA DIVISION...** Produce Packing Equipment ... Flavorseal Protection & other processes. Dunedin & Lakeland, Florida.

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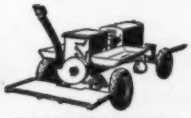

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# LOUIS BROMFIELD'S

**story of his Ohio farm**

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"A book that every countryman and every gardener should read and get excited about . . . What Louis Bromfield has proved in his stewardship of Malabar Farm can be proved by everyone who tills even the smallest plot. Save the land and you save all. A crusading book? Certainly it's a crusading book—and an important one."

—RICHARDSON WRIGHT,
*New York Herald Tribune Book Review*

"A useful guide to all, and they are legion these days, who are interested in claiming from the soil the best that can be had and in improving the soil in the process . . . Mr. Bromfield's great experiment in the reclamation of used-up soil in the restoration of the magic 'balance of nature' . . . has been a success . . . *Pleasant Valley* tells in full and usable detail, the plan, the means, the failures, and the achievements for a six-year period." — GRAHAM BATES, *Saturday Review of Literature*

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on which no salvage figure is available.

An obvious reason for this is that overseas no conservation program need be enforced other than that created by necessity. The pressure is so great that the problem is not of using every piece of scrap wood, but of using it in the most essential way. Theoretically each outgoing unit has enough for its minimum needs; and any additional wood must be requisitioned by strict priorities. Extra sources are native woods and scrap lumber, for which portable sawmills are set up. As operations move on, buildings are taken apart and sent forward in a "roll-up" program.

In addition to packing boxes, cargo ships leave port with approximately 60,000 board feet of dunnage, shores, chocks, pallets and other forms of lumber needed to store cargo on board. Much of this has already been re-used. Once on the other side, seventy-five percent is reclaimed immediately. Little comes back, as returning cargoes need not be packed so carefully. Besides, lumber is much too scarce. The case of India is cited, where the suggestion that packing cases be returned raised a storm of protest.

Therefore, when lumber comes off a ship, a salvage officer distributes it where needs are most pressing. Packaging has first choice, and re-processing mills are set up to provide boxes for this purpose. An example of such a plant is at Oran, North Africa, which turns out over 3000 a day.

The British, likewise, have made a sizeable business of re-sawing lend-lease boxes and crates into smaller units for re-shipment. Their request that the waterproof asphalt layer on certain types of crates be left off because it gummed up the saws is an example of the care with which scrap lumber is salvaged. Forms for re-enforced concrete building come largely from lend-lease dunnage.

In France the next most important use after re-boxing has been for flooring and lining tents against winter. Furniture is another; and quantities of desks, tables, chairs and partitions are made from scrap lumber and plywood boxes. Repairs, bins, lockers, filing cases—the list is endless. Down to a board foot, every piece is used.

Lumber's final gift may be the fire that warms some shivering soldier. He and millions like him will return to America knowing that wood is an indispensable aid to men in every phase of life; and that the forests which produce it are a heritage to be guarded and conserved forever.

## National Tribute Grove

(*From page* 215)

Tribute Grove: THE ETERNAL GRATITUDE OF A NATION ETERNALLY EXPRESSED."

Through Duncan McDuffie, president, and the Board of Directors, the Save-the-Redwoods League, accepting and endorsing this proposal, has undertaken to cooperate and participate to the fullest extent. The procedure indicated is being followed. The necessity of saving the vital Mill Creek redwoods to round out the sanctuary reserve is stressed. It is seen that completion of this great program will represent the climax of the Save-the-Redwoods movement.

Contributions from numerous individuals, firms and organizations will provide for establishment of this grove as a tribute to their sons and daughters and their employees in the armed services. The names of those honored will be recorded in appropriate manner. Each donor is privileged to have the name or names of the honored ones inscribed in a *Golden Book*, to be enshrined both in Washington, D. C., and in California.

A National Committee of Sponsors has been organized with Honorable Joseph C. Grew, of Washington, D. C., as chairman. Exemplifying the enthusiasm of the sponsors, Ovid Butler, executive director of The American Forestry Association, said: "I cannot think of a more appropriate memorial."

Redwood forests are eternally associated with peace. It is heartening to realize that this National Tribute Grove right now is near the world center of interest, that this and the other redwood forests are to be visited by statesmen who are attending the San Francisco Conference. This is a fulfillment of the thought expressed prophetically in 1942 by Dr. John C. Merriam in a message to the Save-the-Redwoods League, "that for the statesmen who settle those great questions (of the peace conference) in which time is a critical element, we should recommend a sojourn of at least a few hours in a redwood temple, where time must be faced and in some measure appreciated."

And surely all who visit it will recognize the eloquent appeal of that grove which is to be dedicated to those who have served in the greatest of wars, who have striven valiantly to attain a peace as long-enduring as the mighty redwoods.

*The Treasurer of the Save-the-Redwoods League, receiving contributions for the National Tribute Grove, is Dr. Robert G. Sproul, University of California, Berkeley 4, California.*—EDITOR.

THERE'S **READY CASH** IN YOUR WOODLOT

. . . . . AND EVERY LOG SPEEDS **VICTORY!**

WOOD IS ONE OF THE
GREATEST SHORTAGES OF ALL
START NOW TO CUT AND HAUL!

WOOD is one of the most urgent war needs today! And the only way the need for pulpwood and lumber can be supplied is by getting MORE wood from farms large and small—one cord or a thousand. . .

The use of pulpwood and lumber is restricted to military and essential needs today and is more rigidly controlled than ever before. The slightest let-up in production would tie up countless war industries and might affect the length of the war.

There are many days through the year when weather and crop conditions will keep you out of the field. Those are the days you can turn your extra time and excess trees into cash—cash that will buy new farm equipment, stock, war bonds or help you pay off the mortgage or taxes.

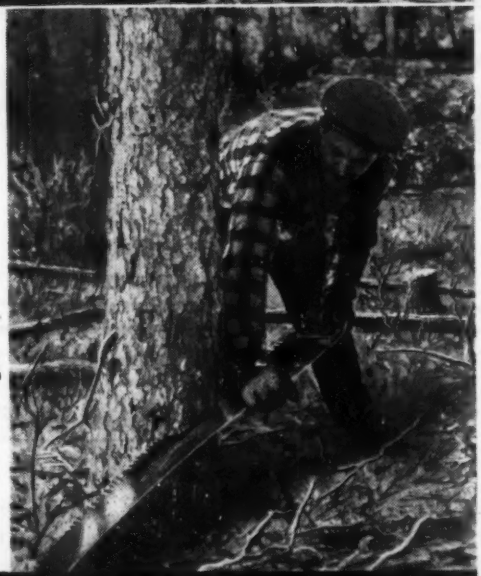
## A GOOD JOB OF CUTTING FARM WOODS PAYS NOW AND LATER

Cut Victory timber—but cut it wisely! Wise cutting leaves a good stand of trees and means faster growth—larger timber crops—a steady cash return. Harvest ripe trees and thin crowded stands. Take out diseased, leaning, heavy-topped trees and others of poor quality. Leave medium-sized, fast growing, root-firm, healthy trees of good quality and younger growth.

NOW is the time to start cutting. Wood is a crop with a future—and its present needs are VITAL!

### SEE YOUR COUNTY AGENT BEFORE YOU START

Get the advice of your county agent before you start to cut your timber. He will tell you how to thin and improve your woodlands and how to market your pulpwood and lumber. SEE HIM TODAY!



## UNCLE SAM NEEDS WOOD TO MAKE

GUNPOWDER — PARACHUTES — MEDICAL DRESSINGS — SHIPPING CONTAINERS

Minneapolis-Moline has some large-size Tractors available for this important war work—see your nearest MM dealer at once if interested!

MM produces all the tractors and farm machinery allowed under government limitation orders for which materials and manpower are available on time and MM also makes many vital products for our fighting men and will continue until Victory is ours.

MINNEAPOLIS-MOLINE MODERN FARM MACHINERY

# MINNEAPOLIS-MOLINE

POWER IMPLEMENT COMPANY MINNEAPOLIS 1, MINNESOTA, U. S. A.

WAGES · TAXES · MARKETS · BUSINESS
Timber serves all!
The lumber industries' job today is more than just harvesting trees and delivering their products to the markets. Industries' service today must supply today's markets and also provide for future markets. This conception has stimulated the present tree farm movement.
The Simpson Logging Company has a continuous record, extending over fifty years, of operating its timber under a management plan. Today's plan places cut-over lands under certified tree farm management.
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**ONE SMOLDERING CAMPFIRE**
**CAN DESTROY A FOREST!**

Because many people only thought their campfires were dead, thousands of acres of forest lands have been ravaged by destructive fires.

Don't take it for granted—be sure your fire is out.

Stamp on it, reducing every ember to powder. Then rake it over thoroughly. Then douse it with water until not the slightest spark remains.

Your help is needed to keep America green, to maintain our forest lands at their productive peak.

## Elephant Loggers

(*From page* 229)

twigs, or the bark peeled from some favorite tree, and then beating it back and forth against the ground, or on a horny forefoot, to get rid of the earth or roots or unwanted particles. By such action a mouthful is reduced by about a half.

Running water is supplied to a pool in the *keddah*, being pumped in through pipes. Into this pool the whole herd will push its way two or three times a day, stirring up the mud and making it impossible for the animals to get the quantity of clean drinking water to which they are accustomed, and which is necessary if they are to remain in good health.

For the "show" drive, a smaller herd had been rounded up, its arrival timed to synchronize with that of the Viceroy and his party. Then, with the stage set, and at a signal delivered by telephone from the royal box, the herd crashed out of the jungle and into the river, the tusks of grand old bulls gleaming in the sun and frightened calves scuttling along between their mothers' legs. Close behind came the line of *kumakis*, ridden by their mahouts driving the herd forward, with a thousand coolies following, yelling, clattering their bamboo rattles, blowing their great brass horns and firing blank cartridges into the air. To the noise made by the beaters the terrified herd added its wild trumpeting.

A little beyond the river crossing the herd arrived at the *keddah* and about twenty animals were driven into it, the rest being allowed to escape.

Next started what is the most difficult and dangerous part of the business. The captives were roped and led away to the river to bathe and slake their thirst. Afterwards they were chained to great trees in a permanent camp until they were tame enough to be trained or sold. The animals are reduced to submission by under-feeding and by severity.

To rope a wild elephant in the *keddah* is not easy. To begin with, a number are enticed and driven into the roping enclosure. Then the great drop gate is lifted, and the most powerful and best trained *kumakis* are ridden in by their mahouts until the confined space is so full that it is impossible for an angry bull to charge. The mahouts then sling great rope nooses around the wild elephants' necks. This is generally done by mahouts sitting on their elephants' necks. However, it is often necessary to stand up, and no one hesitates to step across onto a wild one's back to tighten a knot or pull a rope into place. In this the wild elephants show such a lack of intelligence that it makes one wonder whether they are endowed with the men-

tal capacity with which they are credited. None seem to realize that the men on the *kumakis'* backs were responsible for the terrifying things that were being done to them. Only once did the writer see a cow, which was endeavoring to protect its half-grown calf, put up its trunk and try to seize a mahout; but even this was a half-hearted effort, and the man easily evaded the trunk by slipping far over the other side of his mount's neck.

Next, leg ropes are fixed. This is done by men on foot, who fearlessly approach a new captive, held by two tame elephants, slip a rope around its hind leg, tie a slip-knot in it and pull it up tight. The end is then thrown around the body of a strong *kumaki* and made fast.

After roping of the captives was complete, the great gates were opened and they were led out, fighting all the way, to the river to bathe and drink their fill before being chained up in the permanent camp.

One twenty-four-year-old tusker, nine feet at the shoulder, gave a lot of trouble. He was tied by ropes to four powerful fighting bulls, and not once did he cease to struggle. In whatever direction he charged, however, there was always a strain put on the opposite rope to stop him.

This elephant, and two fine young cows—one with a young calf at heel—were purchased by the writer for the Madras Forest Department. They were the only full grown elephants in the *keddah* worth having. The rest were roped and taken out in the course of the next week, fifteen of them to be released because of age or injuries. The rest were sold to timber merchants, logging contractors and surplus owners.

## Forest Exchange

(*From page* 204)

croachment on the vanishing wilderness must be studied seriously, and with a long-range point of view. Ninety-six percent of the park is devoted to the claims of usual public recreational use. The other four percent, where recreational use of certain types might injure research use, must remain inviolate—though not closed to anyone who wants to enter on foot."

Willis King, formerly associated with the wildlife division of the National Park Service, writing in the *National Parks Bulletin* (now *National Parks Magazine*) for June 1938, has this to say about the area in question: "Three Forks has been known for many years

Cuts Everything
FROM BLUE GRASS TO A 30" OAK"
—says Missouri Lumberman
Bucking Logs Vertical Position
—and that's a typical enthusiastic report on the Lowther C-Saw! Large timber operators say—"It enables one man to do the work of 3". Single independent loggers say—"It triples my former production". Whether the job is felling or clearing—whether hardwood or pulp—the Lowther C-Saw is producing for timber operators in these days of scarce labor and pressing war production. Find out what it can do for you.
Felling Trees Horizontal Position

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5-45

**Book Matches To Be Scarcer**

Book matches, already hard to get, will be fewer in 1945 than they were in 1944, the War Production Board reported recently.

Approximately 460 billion matches will be produced in 1945 as compared with approximately 475 billion in 1944, the WPB said, adding that of the 1945 production the armed forces will require 35 per cent of the book matches and the entire output of the strike-on-box matches.

# BOOK MATCHES IN FOUR COLORS WITH A FIRE PREVENTION WARNING!

FRONT

BACK

SPREAD the message of Forest Fire Prevention by distributing these useful Book Matches—and at the same time have the advantage of your imprint on each match book. Give them to your customers, friends, and arrange for their distribution among local drug, tobacco and sporting goods stores.

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A Match Has A Head But Can't Think— You Can—
BE SURE YOUR MATCH IS OUT
*Cover Design by*
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INSIDE COVER

THESE useful matches *with your imprint available* in case lots (2,500 books) at $12.50 a case—Free Delivery on 3 or more cases with same imprint to one address. Express collect on less than 3. State Tax added in these States: Iowa 2%, California 2½%, Ohio, 3%. Allow 4 weeks for delivery.

IDEAL for all companies, associations and individuals who desire to promote a forceful and practical message in the interest of Forest Fire Prevention.

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IMPRINT SHOULD READ:

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STREET ADDRESS _____

CITY _____ STATE _____

5-45


as the choice spot for those who really wish to get away from mechanization. It can be reached only by primitive foot trails, first blocked out by timber cruisers. The spot is so fine that efforts made in getting there are well repaid. The old trails are very steep and rough, pass over mucky spots of earth in several places, cross and recross the streams, so as to be impassable in periods of heavy rainfall. Briars and rhododendron close in over the old trails rapidly unless periodically removed. The area is bounded by horse trails, but none enter it." Mr. King adds, "Such a program of research areas will insure the preservation in an unaltered condition, of some of the finest natural features of the Great Smoky Mountains National Park."

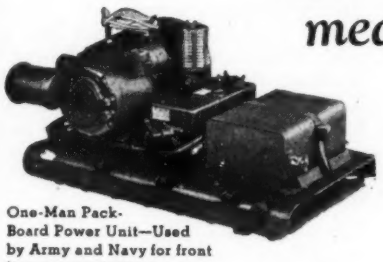
Nearly the whole face of our land has been altered—much of it severely abused and wasted by selfish interests. Yet ours is a rich nation with a vast land area and we are able, and should be proud to be able, to hold a few small spots in complete preservation of primeval conditions. As our population increases we need therefore more land held in a natural condition, not less.

On this subject, President William P. Wharton, of the National Parks Association, writing in the *National Parks Bulletin* for July 1940, says, "There is still a deficiency in representative botanical areas, and provision should be made for the preservation of these and other suitable areas of scientific interest."

It has been stated that no scientific use is now being made of the Three Forks area, and because of this, the suggestion is advanced that it should be opened up for additional public use. Simply because no present scientific use is being made of it, who is to say that it should be opened up to camping, fishing and riding? Who would be so bold as to say what great scientific contribution might not be made by the area in the future if its complete preservation is maintained? It is the duty of each generation to pass along to each succeeding generation this superb bit of primitive wilderness unimpaired, for as more and more of our land succumbs to human activity, in direct proportion will the value of the research area increase.

As for fishing, it might be well to say that, although the National Parks Association has never gone on record favoring the exclusion of fishing in national parks, it is true, nevertheless, that many men believe fishing in the parks is a detriment to the maintenance of natural conditions. In the widely-accepted national park standards we find the following statement: "That each park area shall be a sanctuary for the scientific care, study and preservation

# ☆ Jacobsen WAR MODELS mean BETTER PRODUCTS TOMORROW



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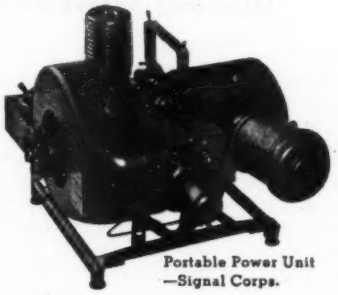
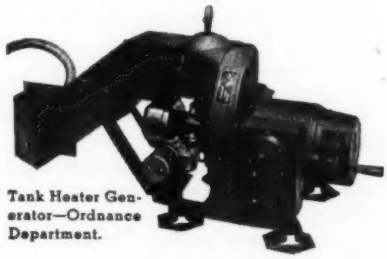
Performing important war tasks, military goods produced by us stem directly from a quarter century's experience in specialized development of mowing equipment.

When manufacture of Jacobsen mowers and other units is resumed, they will benefit from this war-sharpened experience. The skill and capability which have enabled us to carry through these important war assignments will find a continuing development in Jacobsen products of peace.

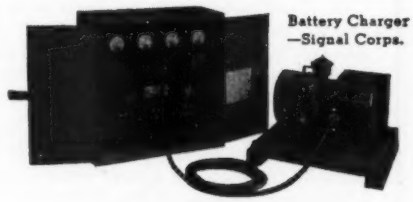
Among the Jacobsen war assignments are the lightweight, easily portable power units now performing a variety of important tasks for the Armed forces. All Jacobsen facilities — its engineering and manufacturing experience, its productive capacity — will be at the disposal of interested peace time users of these and other Jacobsen products.



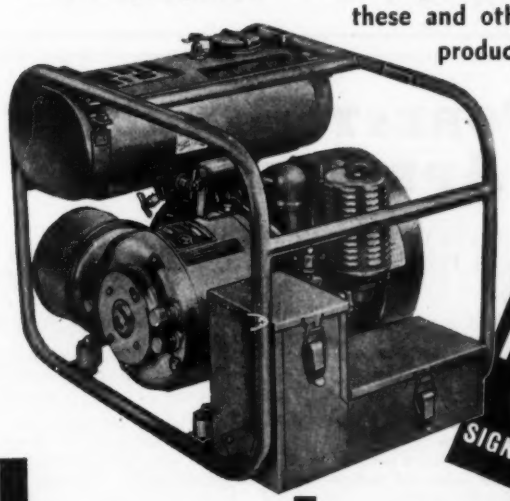
Portable Power Unit —Signal Corps.



Tank Heater Generator—Ordnance Department.



Battery Charger —Signal Corps.

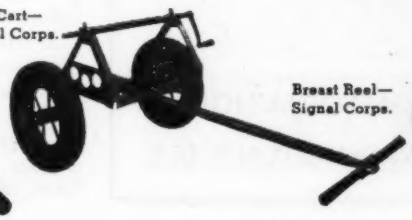


LIGHTWEIGHT POWER UNIT SIGNAL CORPS.

Reel Unit— Signal Corps.

Jacobsen MANUFACTURING COMPANY RACINE, WISCONSIN

Reel Cart— Signal Corps.

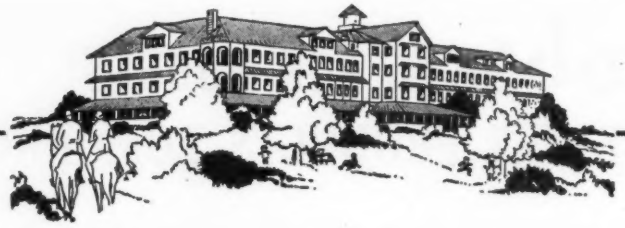


Breast Reel— Signal Corps.

Reel Axle— Signal Corps.

Machine Gun Belt Loader—Ordnance Department.

Cartridge Extractor— Ordnance Department.



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TO PROVIDE A BASIS for informed postwar handling of one of the country's most important natural resources, The American Forestry Association is undertaking a fact-finding survey to determine what effect the war is having upon the country's forests and forest lands and what will be their condition when the manifold problems of reconstruction are at hand.

The project is a broad cooperative undertaking in which all interested individuals and agencies are invited to join. Its overall objective is to have available at the war's end down-to-the-minute facts as to the forest situation, upon which public and industrial policies of forest conservation, management and land economy can be based.

Public-spirited citizens, industrialists and organizations alert to the need of forest conservation and development in postwar economy have made the survey possible by underwriting more than ninety percent of its estimated cost of $250,000. The Association is now engaged in raising the balance.

Let's make it a joint undertaking. We invite your help in this financing. Do it now with a cash contribution, a pledge, or, buy a Series F or G War Bond in the name of The American Forestry Association and mail it to us.

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of all wild plant and animal life within its limits, to the end that no species shall become extinct; that wilderness features shall be kept absolutely unmodified." Fishing in national parks waters has greatly modified aquatic life, and this in turn has had its effect upon land species. Where is the line to be drawn? Is it asking too much to exclude fishing, as well as campgrounds and horse trails, from a small portion of a national park? — *Devereux Butcher*, Executive Secretary, National Parks Association, Washington, D. C.

## Wartime Sprays

(*From page* 233)

is further aggravated by the recent embargo by the Office of Defense Transportation on less than carload lots.

The arborist should now have his full year's requirements in stock ready for use, and if shade tree owners have not already placed their 1945 spray requirements they should immediately do so. This will allow the arborist to properly route his equipment to eliminate call backs and thus save on manpower, gasoline and tires.

In conclusion, your shade trees will be pest free if the following general spray rules are observed and adhered to:

1. Know what you are spraying for, the correct formula to use and proper timing of the spray.

2. Stomach poisons should be applied to all leaf surface just prior to the injurious stage of the insect.

3. Fungicides must be applied thoroughly to all leaf surface before the disease appears. Several applications during leaf development are often necessary for proper control.

4. Contact sprays are effective only when the insects are present and individually hit with the spray. This means a thorough soaking of the entire tree.

5. Always use a sticking and spreading agent with poison sprays, and a wetting agent with nicotine sprays.

6. Do not use arsenate of lead or soap together or follow one another. This also applies to a lesser extent to sulphur and soap.

7. Do not combine oils and sulphur, in any form, in the same solution or to follow one another.

8. Do not spray sugar maple, Japanese maple, butternut, walnut, magnolia, or beech with oil sprays.

9. Do not spray with oils when the temperature will fall below thirty-two degrees Fahrenheit within twenty-four hours after the spray is applied.

## Chelan

(*From page* 231)

trout, the hunter his deer; and to the mountain-traveler the cool fresh air, the scenery and the solitude of a high country that extends a hundred miles down each side of the Chelan Valley.

Access to the lake is by the great Northern Railway and a highway forty miles north from Wenatchee; also by highways from Grand Coulee Dam, or from Spokane, two hundred miles to the east. These bring one to the city of Chelan situated at the foot of the lake, the center of an irrigated fruit-growing district. Passenger and mail-carrying boats operate on regular schedule to Stehekin. Highways serving orchard and farming districts extend ten and twenty miles up the north and south shores respectively. Beyond there travel is entirely by boat.

The Chelan National Forest includes all of the Lake Chelan region except the open lands and settlements around the foot of the lake.

Orchards and farms in the fertile but arid lands require water for irrigation. This is brought in long canals high above the lake from mountain streams.

Timber from the national forest supplies the fruit district with boxes necessary to ship their products, and other local needs. It is cut in the foothills well back from the lake. National forest timber also was furnished the Howe Sound Company for its extensive mining operations on Railroad Creek. This mine runs steadily throughout the year, employing around 400 men. Its camp, operated under the terms of a special use permit issued by the Forest Service, is comparable to urban development. Though far back in the mountains, the residences, hospital, dormitories, recreation hall, school and other buildings are of modern type. Its electric power involves fifty miles of transmission line from the dam and powerhouse near Chelan. These were required to be so built as to preserve natural scenic attractions along the lake. In addition to timber, range and mining, recreational facilities for summer camps, resorts, organization sites and winter sports have been provided on the national forest, but all with due regard to maintenance of natural conditions.

The Indian, in his dugout canoe, no longer navigates the lake in search of game, huckleberries and other supplies. The mining boom of a half century ago has passed and its scars have become obliterated. Homes and farms replace grasslands. Their needs, and those of industrial development, have been supplied. But the scenic beauty of Lake Chelan has been preserved. It remains the Land of Beautiful Water.


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## Wooden Boats

(*From page* 211)

Alaskan campaigns of Attu and Kiska were given opportunity to prove their ruggedness during the winter of 1942-43.

"We heard about williwaws," Lieutenant Gilbert Reed, a veteran of that campaign told the writer, "and we believed what we were told. But you just have to be in a williwaw to appreciate the fury of these gales peculiar to the Alaskan coast.

"You are patrolling off-shore in a calm sea. There is a little wind, the sun is shining—and then it happens. The wind whips the sea into a frenzy. The swells become mountainous waves in a matter of seconds, and the PTs begin bouncing about like corks in a whirlpool. At the height of one storm, we lost visual contact with a PT which we thought was 200 yards astern of us. We had just settled in a wave trough when the crew member on watch in the after turret yelled. I whirled around in the cockpit to see the bow of the other boat loom on the crest of a fifty-foot wave just aft of us. It seemed for one long moment as though she were coming down on top of us, but as the wave broke, the boat descended astern.

"Some williwaws have been reported which attain a wind velocity of 130 miles an hour. In the face of such gales it is usually impossible to remain anchored except in well-protected coves. During the worst blows, we cast off our lines and cruised about the harbor until the wind abated and the sea calmed. Fortunately williwaws die down just as quickly as they blow up or some of us wouldn't be here to tell about it.

"Between the fog, the poor charts, and the williwaws, we developed a system of finding our way which we described as potato navigating. During extremely foul weather we had one man stand on the bow with a bushel of potatoes. His job was to systematically toss the spuds into the water. When he didn't hear a splash, he reported 'land ho.'

"The roughest sea I personally encountered was during a 280-mile run from Amchitka to Aidak. We were about fifty miles from our objective and since we were late, I had the throttles nearly open. After gaining considerable speed by riding downhill on a long, rolling swell, a freak wave built up in front of us. Under the circumstances, we had no alternative but to plunge directly into it. The terrific impact of water versus wood and steel tore away the radio, searchlight, compass and chart house. The steel securing bolts of the gun turrets bent and snapped. A 100-pound anchor, securely lashed to the


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5-45

forward part of the boat, was torn from its moorings.

"We managed to grope our way and potato navigate into our base. Three days later the boat was repaired and ready for operations."

Because of their small size, speed, and adaptability, the PTs have been used in every conceivable type of naval operations. Their future use and development is as uncertain as the exact time of V-day. And the writer will not crawl out onto a limb and make any predictions about either.

## Corkateer

(*From page* 224)

*dron amurense* is being offered by Mr. McManus to foresters and others for experimental plantings. Next season, he hopes to have a supply of *Phellodendron lavellei* seed to distribute and, if a present experiment works out, he also will have a limited supply of *Quercus variabilis* seedlings.

Charles E. McManus, who is becoming known as "The Corkateer," has great hopes for his program. He believes that widespread cork oak planting will not only establish in this country a handsome and valuable tree, but that it will lay a cornerstone in the foundation of an American cork growing enterprise.


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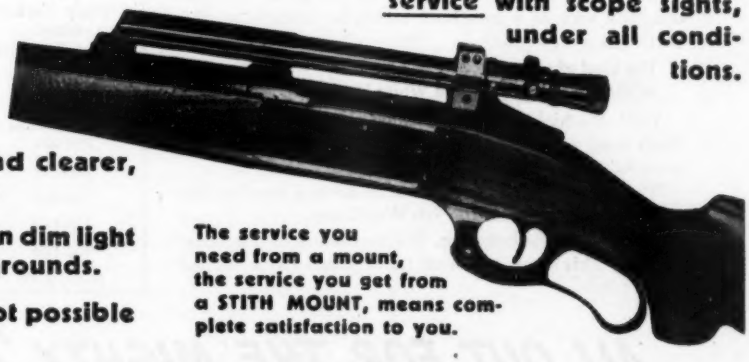

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Official U. S. Navy Photo

**Admiral Halsey** has his eye on a fine white horse called Shirayuki.

Some time ago, at a press conference, he expressed the hope that one day soon he could ride it.

The chap *now* in Shirayuki's saddle is Japan's Emperor—Hirohito.

He is the ruler of as arrogant, treacherous, and vicious a bunch of would-be despots as this earth has ever seen.

**The kind of arrogance shown by Tojo—who was going to dictate peace from the White House . . . remember?**

Well, it's high time we finished this whole business. High time we got the Emperor off his high horse, and gave Admiral Halsey his ride.

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IN THE

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TO provide a basis for informed postwar handling of one of the country's most important natural resources, The American Forestry Association is undertaking a fact-finding survey to determine what effect the war is having upon the country's forests and forest lands and what will be their condition when the manifold problems of reconstruction are at hand. This important undertaking is known as the Forest Resource Appraisal.

Public-spirited citizens, industrialists and organizations alert to the need of forest conservation and development in postwar economy are making this survey possible by underwriting its estimated cost of $250,000.

Many other individuals and organizations are indirectly supporting this activity through membership in The American Forestry Association. We would welcome your participation in the important program of the Association, and for your convenience the various classes of membership are listed in the coupon below.

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## Michigan

(*From page* 221)

mate that there are 12,000,000 cords of wood suitable for making pulp (aspen, balsam fir, spruce, jackpine and tamarack), also 20,000,000 cedar poles and 87,000,000 cedar posts available today.

It has been said countless times that forests are not static. Mature timber is harvested, sometimes so carefully that the remaining stand appears scarcely to have been touched. More often all larger trees are taken and only the smaller left. Yet if fire is kept out the survivors continue to grow, usually faster than before the competing veterans were removed. An observer, returning after a few years, finds that such stands are changed. Poles have become sawlogs, saplings have attained cordwood size, seedlings have grown into saplings, and many new seedlings have germinated. Even when close cutting is practiced these areas which are protected soon become restocked with some sort of tree growth. Superficially, Michigan's overall forest picture does not seem to have changed greatly in ten years. Sawtimber amounting to 5,084,000,000 board feet has been removed while 1,418,000,000 feet have grown. The present sawtimber area is smaller by 1,000,000 acres, even after adding new cordwood stands.

At the same time there has been steady recruitment of cordwood ranks through growth of saplings; despite a drain through cutting for pulpwood, posts and poles, fuel and chemical wood, the loss of a large area to sawtimber class by progression from cordwood, we find a net reduction of only 345,000 cordwood acres.

In terms of volume, it is estimated that 22,741,000 cords of wood were cut for all purposes, while 20,541,000 cords of new growth replaced this loss. At the lower end of the forest scale, cutover lands were being restocked at a rate which added 1,000,000 acres in ten years.

It should be re-emphasized that old growth sawtimber is being reduced at a rapid rate. So is second-growth sawtimber. Increased demand for lumber to meet war requirements has resulted in utilization of both small and defective material as well as the large and sound. Thus we burn the candle at both ends and, after logging, fewer trees remain on cutover areas than was the case prior to 1941.

While many lumber operators follow such destructive practices, a few have adopted conservative cutting methods and are applying them seriously despite the pressure of war needs. Fortunately these concerns own large areas of sawtimber in the Upper Peninsular and

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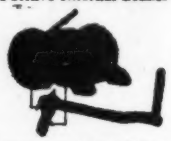

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their policies will have important results. Some woodlot owners are practicing wise selection, but many are not, and much of the present improper cutting occurs in farm woodlots.

Growth in Michigan forests is believed to be at least as great, in cubic content, as drain from all sources. It is estimated that during the next decade there will be an increase of sawtimber volume by growth of not less than 4,976,570,000 board feet, and an additional increment of 3,070,340,000 cubic feet of wood. Since such growth will be distributed over the entire area, and in trees of different sizes, much of it will not be available until some future time. We estimate that 2,400,000,000 board feet of this sawtimber and 1,220,000 cords of new pulpwood will become usable by 1955.

It is believed that, if present cutting practices are followed, and present production of lumber and pulpwood are maintained, the net reduction of timber supply during the next decade will amount to 5,000,000,000 board feet of sawtimber and 2,280,000 cords of pulpwood. If improved forest practices result in leaving more productive growing stock these reductions can be partially offset.

Naturally we wish to know more about the chances of maintaining production of the more desirable species. Present estimates of sawtimber indicate that two-thirds of the softwood is hemlock, 11.53 percent is spruce, 10.55 percent is white pine, 7.23 percent balsam fir, 1.87 red pine, 1.26 jack pine and .89 percent tamarack.

The indicated percentages of hardwoods are: sugar maple 36.96 percent, yellow birch 20.87, beech 7.58, elm 6.75, oak 6.53, soft maple 5.93, aspen 5.54, basswood 3.76, paper birch 1.82, and all others 4.26.

Since the past five-year period has been one of strong demand for lumber and other forest products, it is reasonable to assume that production has been closely related to available timber supplies. This is pointedly apparent in the species distribution. As cutting continues these sawtimber holdings will exercise increasing controls over production.

In softwoods the heavy drain will come upon hemlock and white pine, with small demands upon spruce, balsam fir and tamarack. Sugar maple will continue to account for more than half the hardwood output, with yellow birch second and other species trailing far below.

Because certain operators are nearing the end of their timber supplies it is probable that lumber output will decline somewhat. If lessened demand makes it more difficult to market defective and immature trees this reduction may amount to as much as twenty percent.

Sawtimber reserves are available to maintain a yearly output of 400,000,000 feet for the next decade. If managed according to standards already well understood and demonstrated to be practicable these forests, large and small, can be called upon for gradually increasing production after twenty to thirty years.

Pulpwood production can be maintained at 350,000 cords annually and eventually stepped up. Through heavy cutting of aspen and jackpine and the regeneration of more desirable species, the problem of inferior species can be overcome in time. Much has been done to reduce the hazards of timber growing in Michigan. Given enlightened forest management, the future looks bright.

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***Above:*** **Pressure stream drives into every smouldering ember as an *INDIAN FIRE PUMP* mops up a forest fire.** ***At right:*** **A fire fighting crew with INDIANS rests after putting out a large western fire.**

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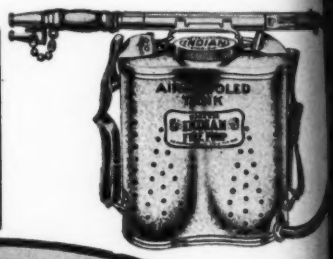


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